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Maps in Libraries

Developments in Library Mechanization

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The Emergence of Maps in Libraries	400	Walter W. Ristow
Current Developments in Library Mechanization	420	I. A. Warheit
Inhouse ADP Training	427	Herbert Holzbauer
Medical Librarian Trainee Program in a Medical Society Library	428	John M. Connor

Special Libraries Association

Making Things Happen	395	Elizabeth R. Usher
Mrs. Elizabeth R. Usher—SLA's New President	397	Marilyn Modern
SLA Board of Directors 1967-68	398	

Features

Library Literature Gleanings	426	Glorieux Rayburn
Have You Heard	430	
Off the Press	431	

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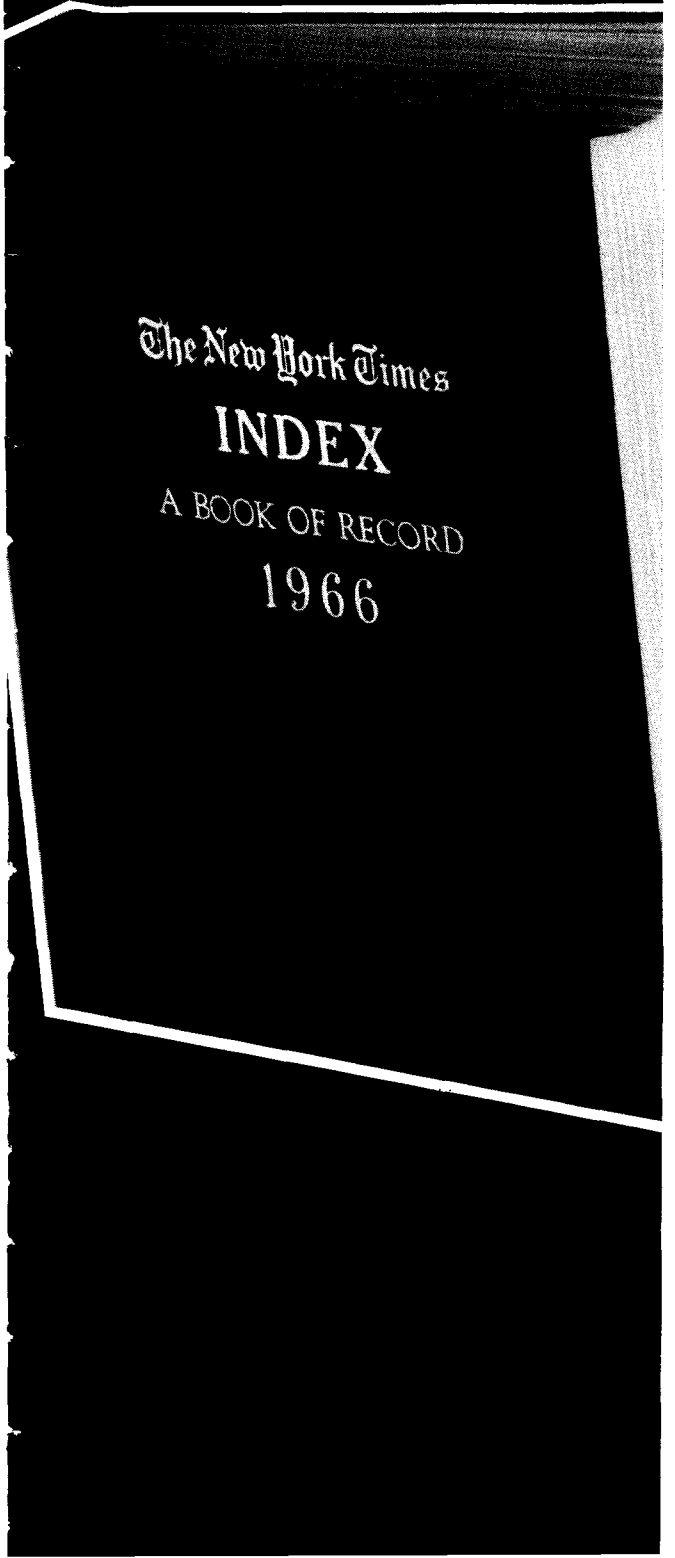

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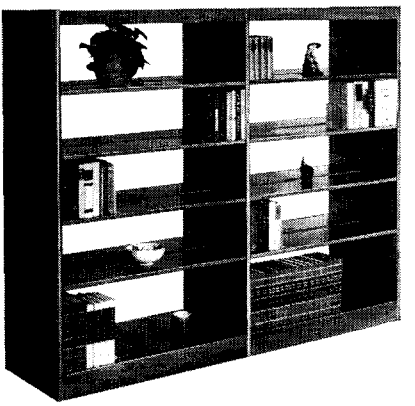

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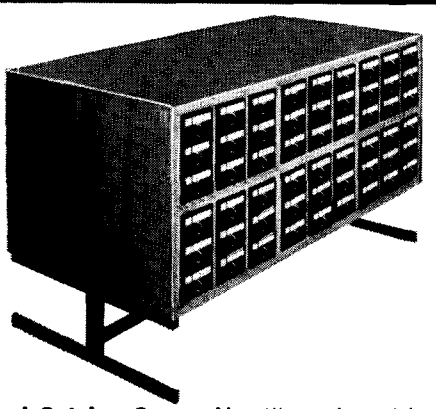

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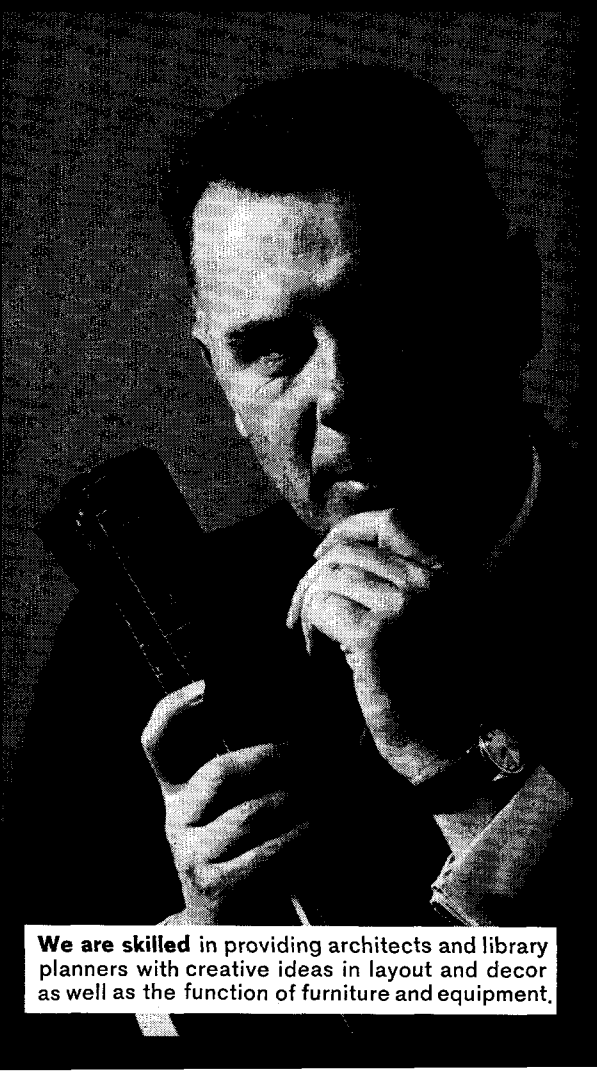

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special libraries

Making Things Happen

Mrs. Elizabeth R. Usher

SLA President

1967-68

Bradford Bachrach

I AM VERY MUCH aware of the honor you have bestowed upon me by electing me President of the Special Libraries Association, and I thank you for your confidence and trust. I take this responsibility gladly and with enthusiasm, and I hope with your help to continue the excellent work done for the Association by my predecessors.

Ours has been termed an era of radical change as opposed to the era of rapid change which took place during the entire nineteenth century, and the first half of the twentieth century. Radical change is as much a part of our library profession as any other and in the year ahead I would like all of us to become aware of the obligations and the opportunities of radical change. We owe it to our profession to lead in the development and use of improved library techniques, and to be interested in all kinds of innovations.

No less an innovator than IBM's Thomas J. Watson, Jr., was quoted in January in the *Saturday Review* as follows: "From an industrial economy, in which most people work at producing goods, through our present service economy, producing services, we shall more and more become—the first in the world's history—a knowledge economy, with 50 per cent or more of our work force involved in the production of information." Isn't this a great opportunity for us as special librarians? He goes on, ". . . can one not draw the conclusion that to give as many menial tasks as possible to machines is to dignify man and contribute to progress in the world. Mankind has not been enslaved, but liberated by the wheel and the book, the windmill and the saw, by steam, electricity, and the atom. Mankind will not be enslaved, but liberated by the electronic computer and whatever technological wonders come after it. . . ."

Certainly Watson's words have strong meaning for us—"not enslaved but liberated by the computer . . .," and when I say strong meaning for us I am addressing myself not only to the science librarians but to all librarians including those in the arts.

You do not have to take Thomas Watson's word for it. In a recent issue of *Curator,* Donald Squires of the Smithsonian called "Data Processing and Museum Collections, a Problem for the Present," and assured us that the computer age is approaching rapidly for *all* of us in our fields of operation . . . if it is not already here. It is up to us to think how we as special librarians can best utilize this valuable—incredible—piece of equipment. Let's learn as much as we can about it and prepare ourselves for that time when every special library, whether in science, humanities, or business, will be automated to some degree. The computer promises to free us for the research which is so desperately needed by our companies, by government agencies, universities, colleges, museums, and the other organizations for which we work.

As members of the Special Libraries Association we have other responsibilities. To recruit young people to the profession is one of them. The shortage of librarians and information specialists is still acute and without qualified, well-trained specialists we cannot hope to achieve nor maintain leadership in our fields. It is up to us to publicize special librarianship and to attract intelligent, attractive young people to the profession through an intensive recruitment program in our high schools and colleges.

Recruiting new members for our Association is another obligation which should be of primary concern. A continuing attempt on the part of each one of us to gain members to the Association will result in a strong organization, an organization that can support its important activities in education, research, consultation, and translation . . . to name but a few.

Let's give the information specialists, the systems analysts, the administrators, and subject specialists in universities and public libraries an enthusiastic welcome to SLA! Let every member, every Chapter, and every Division engage in membership drives for bright students as well as special librarians and specialists working in the field. Let's stop being exclusive, let's be inclusive.

Just think—if each one of us were to recruit *one* promising young boy or girl to the profession and *one* member to the Association where we could be twelve months from now. Is that too much to ask?

Columbia University's great president Nicholas Murray Butler once said that there were three kinds of people: those who make things happen; those who watch what goes on; and those who don't know what happened. In the coming year I hope there will be no question as to what kind of people we are. Certainly I know! We are special librarians, the kind who make things happen.

MRS. ELIZABETH R. USHER

Mrs. Elizabeth R. Usher
SLA's New President

ARISTOTLE ONCE SAID, "Men acquire a particular quality by constantly acting in a particular way." If Aristotle had used the feminine gender, he could easily have been referring to SLA's new President, Elizabeth Usher.

A love of music, art, books, and people has always dominated her life from her early childhood in Nebraska to her present position as Chief of the Art Reference Library at the Metropolitan Museum of Art.

Elizabeth was reared in a home where the arts and literature were a major part of the lives of the entire family. Her father was a musician and head of the piano and German departments at Concordia Teachers College. Her mother was talented in sketching and painting. Drawing upon the large library in her home, Elizabeth became an avid reader early in her life and learned to appreciate and respect those things of quality, both tangible and intangible, that a genuine love of books inspires.

As a young girl, she was not one to be inactive, in spite of her love of reading. Whether engrossed in a fast set of tennis or perfecting a new swimming stroke, Liz brought to her love of these sports the same energy and zest which later stood her in good stead in our largest city environs.

Balance and proportion in things led her by contrast to spend much of her additional spare time in the small public library in her home town of Seward. It was here she decided she wanted to be a librarian. While a student at the University of Nebraska, she worked in the university library. She did the same at the University of Illinois while she was doing graduate work in library science.

After receiving her library degree, Elizabeth obtained a position in the library system of Michigan State University. She was there but a short while when she was asked to reorganize the library of the art department. This was the beginning of her very successful career. From Michigan State, she went to Cranbrook Art Museum, Bloomfield Hills, Michigan, and then to the Metropolitan Museum of Art.

A member of SLA since 1947, Elizabeth has always been an active member of the Association, holding offices on the Group, Chapter, Division, and national levels. She is proud of her profession and never ceases to work for its advancement.

She is devoted to the task of bringing into the profession bright young talent. She never misses an opportunity to talk with young people, either individually or in a group. She wants to tell them about special librarians. Her encouragement and enthusiasm is contagious and she is one of SLA's best ambassadors.

As Mrs. Harry Usher she is a gracious hostess and an excellent cook. She and Harry are very proud of their hi-fi and their record collection. On any Saturday and Sunday during the summer, you will find Harry and Liz on the golf course. She seldom exhibits them, but Liz does have trophies to show for her efforts on the links.

Her "particular quality" demands of her a constant striving for perfection. She is always curious and interested. As a librarian, Elizabeth is conscious of her responsibility to improve the image of the librarian, to raise the standards of librarianship, and to lead in the development of new and better library techniques. What better qualities for a President of SLA.

MARILYN MODERN, Staff Executive
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Brooks

HERBERT S. WHITE declares that his career as a special librarian was "primarily marked by the good fortune of being in the right place at the right time—by being at the Library of Congress at the time to learn about the start of national information systems, by being at IBM at the right time to participate in the innovation of mechanization programs, and by being at the NASA Facility to participate as its director in some of the most exciting new ideas in information technology and information management." Mr. White is a member of President Johnson's Advisory Council on College Library Resources, of the proposed Advisory Board of the University of Maryland ERIC Center, and of the New York State Commissioner of Education's Library Technician Program evaluation committee. His spare-time pursuits include music (as a singer in oratorio society and church choir, occasional player of the violin, and avid listener and record collector), the theater (as participant in little theater groups wherever possible and regular theater-goer), and sports (as active tennis player, and spectator and fan of "virtually every other imaginable sport"). Of his profession, Mr. White believes that "special librarianship faces an exciting and at the same time dangerous crossroad. The handling, dissemination, and retrieval of information, previously ours by default because no one else much cared, has become a vital concern of Presidential commissions and Congressional inquiries. We must recognize that there are others who stand ready to assume these responsibilities if we show ourselves to be hesitant, unimaginative, or unwilling to face the future's demand, and the challenge to our profession, as a profession as opposed to simply a technical skill, is very much with us today."

Advisory Council Chairman-Elect

MRS. CHARLOTTE S. MITCHELL was introduced to the wide variety of opportunities in special librarianship by her course in special libraries at the University of Southern California. "Although," she says, "I could not start my career in a special library since I entered the field when one 'hunted' a job rather than 'picked' one, it was not long before I switched." An active member of SLA since 1945, in the Hospital and Nursing Group and in the Pharmaceutical Division, Mrs. Mitchell also participates in the work of both the Medical and American Library Associations. Of her pastimes, she admits to "a great hodge-podge of interests: music from Mozart to jazz, theater, ballet, TV specials, gardening, traveling, entertaining—and reading, of course." She also finds herself well occupied in keeping up with the interests and activities of a lively eight-year-old son. Mrs. Mitchell asserts that "special librarianship is part of the field of information and has long been engaged in information activities, whatever the descriptors attached to them. SLA can contribute to the development of the field by promoting the recognition of this fact, by encompassing in its membership those engaged in all such activities, and by supporting research which will advance the theory and practices of the profession."

Treasurer

JEAN DEUSS is a Greenwich Villager and includes among her several interests art—viewing and, so she modestly claims, "in a small way" collecting paintings and original prints. She also confesses to liking books about books, especially about illuminated manuscripts. Head cataloger of the Research Library, Federal Reserve Bank of New York, she has just completed a busy spring serving as chairman of the New York Convention's Printing Committee and a member of the Registration Committee. Since joining SLA in 1959 she has been thoroughly involved in Association activities, especially in the New York Chapter, as member and officer of a number of its committees and groups. Miss Deuss, who credits Ruth Savord, under whom

she worked when she began her library career, with the greatest influence in shaping her ideas and principles of librarianship, believes that the job of special librarians is to contribute to developments in the fields of research and information, to be informed of these developments, and to be imaginative in the application of them.

New Directors


John Henderson

MRS. GLORIA M. EVANS, a Canadian who crossed over the river from Windsor to Detroit to work as librarian at Parke, Davis & Company, asserts that "no other field of librarianship has the opportunity to influence so many different people who are engaged in so many diversified occupations as those of us working in the special library field. In the same vein there is probably no recruitment tool that is more effective than the special librarian who knows the true meaning of professionalism, both on and off the job." In addition to her work at Parke, Davis and her many activities for SLA nationally and in Chapter and Division, she has served as a member of the steering committee for a study of Michigan's reference and research resources and is a member of the citizen's committee for the Detroit Metropolitan Library Project, "a pioneer effort to make available to everyone in a six-county area the vast research facilities of the Detroit Public Library." "A home in the country, a large dog called Brewster, and an active husband whose idea of relaxation is to clear acres of land and then build a house in the middle of it" also help keep her occupied. She credits her husband, "who realized there was an exciting future in special libraries," with influencing her decision to enter the field and "Florence Armstrong of Ford Motor Company, who, as Michigan Chapter's Employment Officer, back in 1955, not only steered me toward the right job, but also urged me to take an active interest in SLA."

EFREN W. GONZALEZ sees the SLA contribution to the fields of research and information as promoting the wide acceptance of the special library as part of the communications network within an organization and the special librarian as one of the professional managers of information as a commodity, and providing special librarianship with goals and a form to develop new and better ways "to work smarter." Another of the music lovers on the Board (the classics for listening, jazz for playing), Mr. Gonzalez just completed a move from the Grove Laboratories division of Bristol-Myers Products in St. Louis, where he was Director of Technical Communications, to their Scientific Division in Hillside, New Jersey. He is probably best known to most SLA members as the Program Chairman of the 1964 Convention in St. Louis, but he has also been active in Chapter affairs in both the New York and Greater St. Louis Chapters and in publications and committee work for the Pharmaceutical Section and Science-Technology Division.


John W. Diehl

ELEANOR B. GIBSON has been appointed Acting Executive Director of the Special Libraries Association for a two-month period beginning July 5, 1967. From 1947 to June 1967 Miss Gibson was librarian in charge of the Logan Lewis Library, Carrier Corporation of Syracuse, New York. In announcing her appointment, SLA's President, Mrs. Elizabeth R. Usher, expressed the Association's appreciation to Bristol Laboratories, also in Syracuse, where Miss Gibson is presently associated in the Research Library. She served as President of the Upstate New York Chapter in 1960-61 and as Chairman of the Metals/Materials Division in 1961-62, and was coeditor of *Guide to Metallurgical Information, Second Edition,* published by SLA in 1965.

EDITOR'S NOTE: For biographical sketches and photographs of Board of Director members who are continuing in office, see *Special Libraries,* July-August 1966, pages 376-8: Dr. F. E. McKenna, Immediate Past-President; Charles H. Stevens, Advisory Council Chairman; Mrs. Theodora A. Andrews and Charlotte Georgi, Directors. See also *Special Libraries,* July-August 1965, page 374: Phoebe F. Hayes and Ruth Nielander, Directors.

Because of heavy attrition in the ranks of experienced map librarians, and the lack of a compellant to positive action (such as the AMS depository program), progress in map librarianship has been less dramatic during the past twelve years than in the immediate postwar decade. Increase in number and size of map collections, the potentials of automation, future inclusion of maps in the Title II program, and an emerging group of young, vigorous, and well-trained recruits, however, presage an exciting and productive future for map librarianship.

The Emergence of Maps in Libraries

WALTER W. RISTOW

ONE OF THE philosophical satisfactions of middle age," says *Time* magazine, "is not being young."[1] Agreed. But there are also some positive compensations when one has outdistanced youth. The pleasure, for example, of reviewing, in historical perspective, the development and growth of a cause, activity, or profession. Bear with me, then, while I re-run the reel on map librarianship.

Three decades ago, young and enthusiastic, I was employed as a map librarian. Of maps I knew little, of librarianship somewhat less. The profession then had few seasoned practitioners, and pertinent literature was meager and dispersed. Some eight years and one war later, map libraries had increased slightly in number, and one map librarian had been tempered by experience. With self-education as the primary objective, the literature relating to maps in libraries was comprehensively reviewed and analyzed in 1946. Karl Brown, then editor of *Library Journal,* thought the bibliography and analysis merited publishing.[2]

In the decade after World War II, the profession came of age. It was thus possible to report, in the October 1955 *Library Trends,* "that the foundations of map librarianship [had] been greatly strengthened during the past ten years, largely as a result of the energetic and enthusiastic work of a small group of specialists."[3] Warmed by the sweet wine of accomplishment, we predicted, optimistically, that "continued cooperative action should result in further progress toward standardization of processes, techniques, and equipment and in the compilation of additional reference tools and aids."

Progress there has certainly been during the twelve years most recently gone. Many of the proud hopes and objectives of 1955 are, however, largely unrealized. Two factors have, I think, contributed most significantly to the slowdown. First, the Army Map Service depository program, such a powerful stimulus to action in the postwar decade, has had no counterpart in the years here under review. Lacking such a compellant, most library administrators have continued to give low priority to map library problems. Their policies have all too often been influenced by the problems maps pose as nonbook-format materials.

The Manpower Drain

An even greater deterrent has been the heavy manpower drain from the profession's "small group of specialists." By various types of attrition map librarianship has lost, within the past ten or fifteen years, some forty or fifty of its most experienced, knowledgeable, and dedicated professionals. By retirement have gone Mary M. Bryan (Harvard), Hanna Fantova (Princeton), Amy Hepburn (Columbia), Clara E. LeGear (Library of Congress), Paul Lee (General Drafting Company), Dorothy C. Lewis (Department of State), Esther Ann Manion (National Geographic Society), Lois Mulkearn (Darlington Library), Helen White (Free Library of Philadelphia), and Ena Yonge (American Geographical Society). Several in this distinguished group had more than four decades of map library experience, and their combined service exceeds three hundred years.

Among those whom death has claimed are S. W. Boggs, Lloyd Brown, Arthur Carlson, Ruth Crawford, Jacques Frazin, and Carl Mapes. Former map librarians who have transferred their allegiance and talents to

other disciplines or activities account for a further brain drain. Individuals in this category (some of whom continue a secondary interest in map librarianship) are Burton W. Adkinson, Catherine Bahn, Christian Brun, Maud D. Cole, George Dalphin, Ernest Dewald, Elsa Freeman, Herman Friis, Marie C. Goodman, Frank Jones, Robert Lovett, Richard E. Murphy, Albert Palmerlee, Joseph Rogers, Marvin Sears, John A. Wolter, and Bill M. Woods.

The loss of more than 10 per cent of its active workers, including many of the profession's most vigorous and productive leaders, has unquestionably been a crippling blow to map librarianship. There is promise, however, that the patient will recover. Youthful, intelligent, well-trained, and enthusiastic map librarians have already moved into many of the vacated ranks. Others with equally good qualifications will soon join them. Supported by a small cadre of veterans, the emergent generation of map librarians will, I am confident, lift the profession to new heights of service and productivity. There are indications that the updraft has already begun.

A representative few of the new generation of map librarians are Mrs. Thomas Anderson (Columbia University), David Carrington (Interior Department, Office of Geography), William Easton (Illinois State Normal University), Mary Galneder (University of Wisconsin), Carlos Hagen (University of California at Los Angeles), A. Philip Muntz (National Archives), Frank Nicoletti (Army Map Service), Jeremiah Post (Free Library of Philadelphia), and Frank E. Trout (Harvard).

A number of institutions have established separate map rooms or departments since 1955, and some have employed full-time map librarians. Map libraries previously in being have expanded their holdings by as much as 40 or 50 per cent. There are now perhaps some fifty collections in the United States with 100,000 or more sheets, and fifteen or twenty of them have over 200,000 maps. Unfortunately, these figures cannot be documented, for no census of map collections has been taken since 1954. Updating *Map Collections in the United States and Canada* (Special Libraries Association, 1954) is one of several essential compilation tasks that urgently await doing. A few of the larger United States collections are included in Emil Meynen's "Important map collections," published in the 1964/66 edition of *Orbis Geographicus* (Wiesbaden, 1964).

Notwithstanding the growth in number and size of university and public library map collections, there is still a heavy imbalance between their holdings and those of the principal federal map libraries. The National Archives' Cartographic Records Branch, with 1,600,000, Army Map Service, with two million (including multiple copies), and the Library of Congress' Geography and Map Division, with three million map sheets, are from five to ten times larger than the top-ranking nonfederal map collections.

Map Library Surveys

There are several general map library surveys, as well as articles describing specific collections, in recent professional literature. In the former category is Lynn S. Mullins' historic study on "The rise of map libraries in America during the nineteenth century."[4] Major attention is focused on the American Geographical Society and Harvard University map libraries, which were the principal nongovernmental collections toward the end of the century. Although a separate Division of Maps and Charts was not established in the Library of Congress until 1897, by that date the Library's cartographic holdings already numbered forty thousand pieces. American libraries with significant holdings of historical maps, among them the Library of Congress, John Carter Brown Library (Brown University), James Ford Bell Collection (University of Minnesota), Lilly Library (Indiana University), Newberry Library (Chicago), and Yale University Map Library, are mentioned in the *Chronicle* section of *Imago Mundi,* no. 17, 1963.[5]

Described in articles, published in Special Libraries Association's *Geography and Map Division Bulletin* in recent years, have been the map collections of New York Public Library,[6] Harvard,[7] University of Oregon,[8] Los Angeles Public Library,[9] University of California (Berkeley),[10] University of California (Los Angeles),[11] and the Birmingham Public Library.[12] The American Geographical Society's map collection was featured in the March 1955 *Professional Geographer,*[13]

and Dartmouth's "tons of maps" were the subject of a story in the *Dartmouth Alumni Magazine.*[14] Bill Woods' recommendations for University of Illinois' Chicago Undergraduate Division Map Library were published in *Illinois Libraries,* in March 1957.[15] An article describing Cornell University's map collection, initially published in *Cornell Alumni News,* was reprinted in the April-June 1957 issue of *Surveying and Mapping.*[16]

The map collection in Columbia University's Geology Library, and some of its interesting historical maps, was the subject of three articles in the November 1958 number of *Columbia Library Column.*[17] Esther Ann Manion reported on her more than forty years of experience in the National Geographic Society Library, in the *George Washington University Magazine.*[18] "Cartomania in the Louisiana State Library" is the title under which Edith Atkinson discussed activities in the LSU map library.[19]

The New York Public Library Map Division, confined within inadequate walls for more than a quarter of a century, was transferred, on March 1, 1963, to more spacious and accessible rooms on the main floor of the Library's main building. Gerard L. Alexander, chief of the Map Division for some ten years, continues in that position. There are approximately 280,000 maps and 5,600 atlases in the NYPL Map Division. In January 1960 the Map Collection of the United Nations moved to an attractive well-lighted room in the new Dag Hammarskjold Library.[20] The collection, which is under the supervision of Nathaniel Abelson, has about seventy thousand maps and 350 atlases. Access is limited primarily to members of the UN Secretariat, the delegations, the press, and various accredited groups or institutions.

The Winsor Memorial Map Room, Harvard College Library, was one of the earliest established in the United States. For some years the Map Room has not maintained the excellent reputation it enjoyed when Justin Winsor reigned at Harvard Library. From September 1962 to February 1964, R. A. Skelton, superintendent of the Map Room, British Museum, surveyed the map collection, while in residence at Harvard. Pursuant to Mr. Skelton's recommendations, Harvard Library is presently seeking to reestablish its former map library leadership. Toward this end Dr. Frank E. Trout was appointed curator of the Winsor Memorial Map Room in 1966.

Dr. A. Philip Muntz has, since 1961, been chief of the Cartographic Records Branch, National Archives. Herman Friis, former assistant chief and chief of the Branch, is now senior specialist in Cartographic Records and chief of the Polar Archives Branch. The Cartographic Records Branch has issued several additional guides to its collections within the past decade.[21]

Units of the Library of Congress Map Division have had several relocations in the past five years, all within the Library's Annex Building. In 1965, in recognition of the Division's longtime responsibilities for recommending geographical publications and handling reference inquiries in this area, it was redesignated the Geography and Map Division. When the Library's James Madison Memorial Building is completed, within five or six years, the Geography and Map Division is expected to occupy enlarged quarters in the new building. The descriptive booklet on *The Services and Collections of the Map Division,* published in 1951, is unfortunately no longer in print. Because it was not possible to undertake a complete revision, an abbreviated brochure has been prepared.[22]

Procurement continues to be a difficult and unresolved problem for map libraries. This is largely because an estimated 80 per cent of all maps are published by official federal, state, or local agencies. Within the United States government alone, some twenty separate agencies publish maps. Add to this, mapping agencies in all foreign countries, official map publishers in each of the fifty states, and innumerable county and municipal agencies that issue maps, and you have some slight understanding of the problem. Few maps are listed in national bibliographies, and catalogs of official mapping

Library of Congress

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agencies are numerous, generally uncoordinated, and not easily obtained.

Cartographic Production

There are no reliable statistics on the world's cartographic production. Annual estimates range from 60 to 100 thousand sheets, including new and revised editions. If issues of large and medium-scale official maps of all countries were included, even the latter figure might prove to be low. Among the undesirable consequences of government cartographic publishing are the security restrictions placed upon many maps. Some of the best and most detailed maps are consequently not available to nonmilitary users and researchers. In recent years, annual additions to the Library of Congress collections, of newly published maps, have averaged around fifty thousand sheets. Because the Library's procurement sources are extensive and comprehensive, this figure may represent as much as 75 per cent of the world's unrestricted cartographic production. Some forty thousand retrospective, or noncurrent, maps are also added to the Library's map collection each year. Included are some maps from which security restrictions have been removed. Annual cartographic accessions of American university and public libraries range from a few maps to around fifteen thousand sheets. Map libraries in the 150 to 250 thousand sheet category add ten to fifteen thousand maps per year.

The *Bibliographie Cartographique Internationale* is still the most comprehensive international list of cartographic publications.[23] It represents, however, but a small percentage of the total output. The 1966 edition, recording maps published in 1964 for example, includes under three thousand titles. Including editions of set and series maps, this may represent as many as twenty to twenty-five thousand sheets. Collaborators in twenty-one countries, including the Library of Congress Geography and Map Division, assist in compiling *Bibliographie Cartographique Internationale.* The utility of the BCI is increased by its list of publishers' catalogs, author index, and index of editors and printers, all arranged by countries. Franz Grenacher summarized, in 1958, the BCI's contributions and accomplishments for its first two decades.[24] He also made some calculations on the world's map output. In 1964, Mlle. Myriem Fonçin, one of BCI's editors, and former head of the Map and Chart Division, Bibliothéque Nationale, traced the origin, history, development, and scope of this international map list.[25]

Published monographs and articles offer some guidance in map procurement. William Hannah compiled, a decade or so ago, lists of foreign mapping agencies.[26] *World Cartography,* an annual serial publication of the United Nations, has informative and helpful data.[27] In Volume 5, 1955, there was, for example, a "Preliminary survey of world topographic mapping," which was supplemented by a list of official documents and technical publications of various countries. An article entitled "Review of sources of information of surveying and mapping techniques in resource surveys," in *World Cartography,* volume 6 (1958), included a list of mapping agencies in ninety-five countries. Separate articles about official maps and mapping in Finland, Sweden, and the U.S.S.R. were published in volume 7, 1962. *World Cartography* also includes, at periodic intervals, a world index map showing progress on the International Map of the World on the millionth scale.

New Geographical Literature and Maps, published semi-annually by the Royal Geographical Society, London, lists all atlases and maps (excluding sheets of surveys) received in the RGS Map Room. It is an excellent general list. Edward Stanford, Ltd., London, publishes annually an *International Map Bulletin* which includes maps and atlases published in various countries.[28] The last issue examined, no. 18, June 1965, contains a "List of Maps and Atlases Published by many Official Overseas Surveys."

The Natural Resources Unit, Department of Economic Affairs, Pan American Union published, in 1964 and 1965, "annotated indexes of serial photographic coverage and mapping to topography and natural resources" for all Latin American countries, except Cuba. Each volume includes descriptive text, as well as index maps.

Information about all official United States maps and mapping agencies is available from the Map Information Office, Geological Survey, U.S. Department of the Interior, Washington, D. C. Several MIO leaflets

are available on request to that office.[29] Price List 53, of the Superintendent of Documents, U.S. Government Printing Office, published periodically, describes United States official map publications that are available from the Superintendent of Documents. A sampling of official U.S. government maps was described by Dorothy Bartlett in the January 1963 issue of *Special Libraries*.[30]

In a recent number of *College and Research Libraries,* Clifton Brock noted that 55 per cent of U.S. government publications are produced outside the Government Printing Office.[31] The percentage is probably even greater for maps, for the major federal mapping agencies (e.g., Geological Survey, Coast and Geodetic Survey, Army Map Service, Aeronautical Chart and Information Center, Naval Oceanographic Office) publish and distribute their own maps. Sales catalogs of mapping agencies are listed in the *Monthly Catalog of United States Government Publications* (U.S. Government Printing Office).

Some few official state maps are recorded in issues of the *Monthly Checklist of State Publications*.[32] Procuring state, county, and local official maps, however, continues to be a major headache. There are no easy paths out of this jungle. Of some slight assistance is an article published in *Surveying and Mapping* a decade ago.[33] It includes a list of state, county, and municipal agencies with which the U.S. Geological Survey had (as of that date) cooperative agreements for topographic mapping, and a list of the chairmen of state mapping advisory committees.

The most comprehensive listing of United States private and commercial map publications is contained in *Maps and Atlases,* Part 6 of the *Catalog of Copyright Entries*.[34] This semiannual serial has been published, in its present form, since 1947. Like the BCI, there is an unavoidable lag in listings. Volume 19, number 2, which lists maps and atlases registered for copyright in the last six months of 1965, is the most recent issue (as of February 1967). Titles are arranged alphabetically by author, but there is also a supplementary listing by geographical area. A particularly useful acquisition aid is the Publishers Directory, with latest addresses, which is included in each issue of the *Catalog*. A change in organization of the *Catalog* was reported by Buffum in 1959.[35]

Selected lists of new maps are regularly described, by practicing map librarians, in issues of various serial publications. Selections by Roman Drazniowsky (American Geographical Society) appear in *Current Geographical Publications,*[36] and Charles W. Buffum's (Library of Congress) compilations are published in the SLA *Geography and Map Division Bulletin*.[37] Numbers of the *Handbook of Latin American Studies* published in odd-numbered years have geographical references, including maps.[38] The latter are selected and described by James D. Hill (Library of Congress). Some twenty or twenty-five "Distinctive Recent Maps" are described by Walter W. Ristow (Library of Congress) in *Surveying and Mapping,* the quarterly journal of the American Congress on Surveying and Mapping.[39]

Helpful information relating to map publications and acquisitions will also be found in the annual acquisitions report of the Library of Congress Geography and Map Division, published in the *Quarterly Journal of the Library of Congress*. The reports were in the August issue from 1946 to 1961, the September issue in 1962 and 1963, and in the October issue in 1964. Since 1965 the Geography and Map Division report has been in the July *Quarterly Journal.*

Surplus Map Distribution

Although distribution of surplus maps has been appreciably reduced in recent years, the Army Map Service depository program remains active, and deserves mention here. For many map libraries the AMS is still the principal source for medium- and small-scale foreign map series. Several references are concerned with the Army Map Service and its programs. A booklet published in 1960 was "prepared to assist in the orientation and training of AMS personnel and for the information of visitors and others interested in the activities of the Army Map Service. It tells the story of this mapping organization, describes its mission, and explains how it operates. In simple language, it broadly describes the various phases of map making."[40] The effectiveness of the AMS depository program to 1960 was evaluated by Marvin Sears as part of the requirement for a master of library science degree.[41] In 1964 AMS initiated a *Newsletter* for depository mem-

bers. Number 1, dated April 3, 1964, restated the distribution procedures, i.e., "The elapsed time between shipments of maps, sometimes as much as one year, is directly attributable to the procedures we must follow in administering the depository program. Maps supplied to the depositories are not surplus, but maps especially selected. When a new map or publication is produced by the Army Map Service, it is considered for inclusion in the depository distribution. If the map or publication is approved for release, we must then program the actual distribution into our production schedule."

Distribution is only made if there are 250 copies in excess of military needs. The administrators of the program have also "determined that a single distribution each year to depository members is the frequency most compatible with . . . present operational requirements." Five *Newsletters* have been issued, the latest dated September 19, 1966. A revised list of depositories, distributed with that issue, includes 189 institutions. College and university libraries predominate, with a total of 157. Only twenty public libraries participate in the program.

Less formalized than the AMS program is the distribution of surplus–duplicate maps and atlases by the Library of Congress Geography and Map Division. Faced with the problem of processing a backlog of more than a million obsolete and surplus maps, transferred from other federal collections and agencies, the Geography and Map Division initiated, in the summer of 1950, a cooperative project. Representatives of various geography departments and libraries assisted Library of Congress personnel in sorting the large backlog. In exchange for their services cooperating participants selected duplicate maps for their sponsoring institutions. The special project has been continued in the Geography and Map Division each summer since 1950. In 1951, and all subsequent years, the Library employed temporary processing assistants in addition to those sponsored by other institutions. More than two hundred graduate students and librarians, representing sixty different institutions in thirty states and provinces of Canada, have participated in Library of Congress special projects during the past seventeen years. The initial backlog has been supplemented by subsequent transfers from federal map libraries. Cooperating institutions have received more than one million duplicate maps in exchange for the services of their representatives. The Library of Congress permanent collections have been enriched by some 800,000 sheets of noncurrent, or retrospective, maps in the same period. The Library's Geography and Map Division sponsored the eighteenth successive Special Map Processing Project in the summer of 1967.

Under provisions of Title II-C of the Higher Education Act of 1965, the Commissioner of Education (HEW) is authorized "to transfer funds to the Librarian of Congress for the purpose of . . . acquiring, so far as possible, all library materials currently published throughout the world which are of value to scholarship."[42] Because Congressional appropriations in fiscal years 1966 and 1967 were substantially below the amounts authorized in the Act, the Title II acquisition and cataloging programs have not yet been fully developed. Although excellent progress has been made, budgetary limitations, anticipated for fiscal year 1968, will further delay full development. The Association of Research Libraries, through its Shared Cataloging Committee, and the Library of Congress have, therefore, agreed that "periodicals and nonbook-format materials," such as maps, will "not be covered at the beginning of the program." In view of the importance of maps as research materials in many disciplines and subject fields, map librarians regard the decision with concern and strongly hope that it will be reversed.

Map processing involves a broad range of physical and technical operations. They include such unskilled and semiskilled tasks as sorting, arranging, indexing, and filing maps, as well as highly skilled cataloging and classification procedures. One map may require as many as ten individual handlings from the time it is accessioned until it is filed in its proper place in the collection.

Map Cataloging and Classification

As in the immediate postwar years, considerable thought, effort, time, and discussion were directed, during the past decade, toward map cataloging and classification problems. There is, however, little progress to report with respect to agreement on exist-

ing rules and codes, or on prospects for standardized and cooperative programs for cataloging and classifying maps. The hard core of professional map librarians continued, for a time, the attack on the Library of Congress–ALA *Rules for Descriptive Cataloging* (1949), as applied to maps. The arguments, formulated by a committee of SLA's Geography and Map Division, were summarized in reports published in 1948 and 1953.[43] Although the committee's attention was focused principally upon the *RDC*, its strongest shafts were directed at the use of author main entry (instead of area) in cataloging maps. Because of its uncompromising position on this issue, the committee concluded (in the preliminary report) that "constructive comment on individual rules for map cataloging is not possible because of some of the basic principles assumed." The members hoped that "the whole question of selection and arrangement of descriptive data on the printed cards [would] remain open, until the form of heading for maps is settled to the satisfaction of map users." The final report of the committee (1953) recommended "to the Library of Congress [a number of] suggestions for consideration at such time as the map cataloging rules are reviewed." The basic suggestion, as in the preliminary report, was to replace author main entry with an area-date-subject heading.

So preoccupied with the importance of area main heading was the Committee on Map Cataloging that little attention was given to the collective body of rules in *RDC*, or to the specific rules for maps. Only minor criticisms of the rules relating to maps have, in fact, been received by the editors of *Rules for Descriptive Cataloging*, since it was published. The descriptive rules for maps, in the recently published *Anglo-American Cataloging Rules*,[44] therefore, vary little from those contained in *Rules for Descriptive Cataloging*.

Designed as they were for the general library, neither the *RDC* nor the new *Anglo-American Cataloging Rules* adequately meets the needs of the specialized map collection. The professional librarian, engaged in cataloging materials in various formats, will no doubt find in the "Maps, atlases, etc." chapter, guidance for handling occasional cartographic items. Map catalogers in large map libraries, few of whom have professional library school training, are more often confused than aided by the rules assembled in the "Maps" chapter. The latter have neither the technical background nor patience to extract from the other chapters in the volume the guidance they need. The final report of the Map Cataloging Committee recognized this in noting that "the Library of Congress rules for cataloging maps have merely made concessions to those vital characteristics of maps which differ from the characteristics of books."[43] The same limitation (if it can be so regarded) applies to the *Anglo-American Cataloging Rules*. Namely, that they do not include a complete and unified code of rules for cataloging maps. Such a code is, nonetheless, urgently needed and must be compiled soon if map cataloging is to achieve some degree of standardization.

Because of its long-established leadership in standardized and cooperative cataloging, its recently expanded activities in these areas, under provisions of Title II-C of the Higher Education Act, and the preeminence of its cartographic collections,[45] the Library of Congress would be in the best position to take the initiative in promoting standardized and cooperative cataloging of maps. Throughout the seventy years that have passed since a separate cartographic division was established, maps have unfortunately, for various reasons, not received formal cataloging treatment. Perhaps fewer than 2 per cent of the single maps (i.e., excluding sheets of multiple-sheet map and chart series) are, therefore, under catalog card control. The remainder (some 1.5 million sheets), identified only with brief filing and retrieval slips, are filed in an area-subject-date arrangement.

Although there are no major breakthroughs to report for map cataloging and classification, a number of articles and publications have enriched the literature in these fields. Progress and development through the years was summarized and evaluated in two papers. In "Map cataloging: inventory and prospect," prepared just before he assumed administrative responsibility for SLA Headquarters, Bill Woods reviewed the history of map processing theories and practices.[46] The weight of evidence was enlisted

principally to support the area main entry concept for cataloging maps. Mr. Woods quoted extensively from the two reports of the SLA Cataloging Committee. In looking to "the future" he listed several problems, introduced but not considered by the committee, which "merit further study." In his final paragraph he emphasized that "recognition of differences between maps and books and the need for separate rules for the cataloging of maps is long overdue."

For a University of Michigan library science course, Mary Ellin Fink made an exploratory study, in 1962, of "The structure of map retrieval systems."[47] The survey covered eight map collections in the vicinity of Ann Arbor, Michigan. Mrs. Fink observed that "it is hard to understand the great variety of arrangements and classifications in map libraries on the basis of experience with books." In another study Mrs. Fink compared eleven cataloging systems of major map collections in the United States and Great Britain.[48] A table shows "use of items included on map catalog cards." The value of this study is somewhat minimized because several of the systems described and analyzed are no longer in use.

The viewpoint of librarians working with archival, historical, and manuscript maps is expressed in several interesting papers. As a preliminary to establishing a cartographic department in the Illinois State Archives, Emma Scheffler made a comparative study of various systems employed in cataloging and classifying maps.[49] All systems she concluded "are designed *a)* to make it possible to locate material with ease and with a minimum expenditure of time, and *b)* to bring together in the map file all related material." Bordin and Warner believe that "manuscript maps should be treated similarly [to printed maps]. Each map has its own card which should include the following information: area mapped, maker . . ., date, scale, size, and number and subject of insets if any. These cards will be filed first under place name and then in chronological order."[50]

Arguments supporting author main entry for maps are presented by John B. White, Library and Archives Director, Nebraska State Library.[51] "For an historical library," he states, "it is important to establish responsibility for the map. Thus the identification of the 'author,' or cartographer, the individual or the institution, government agency or publisher responsible for the map, is an important responsibility of the cataloger." He points out that "it is often the case that maps do not show a well-defined, generally recognized, place-name area. Maps of the trans-Mississippi west illustrate this difficulty with using area for the main entry." White further believes that "with a card catalog, the user is not handicapped in any way by the cataloger's choice of main entry. . . . There also appears to be confusion between the cataloging of maps and their arrangement. Arrangement by area," he insists, "can be achieved regardless of the choice for main entry." White concludes that "in short, the analogy between map and book cataloging is sufficiently useful to make the so-called author approach to maps preferable for such libraries as the Nebraska State Historical Society."

Several map libraries have published new or revised manuals relating to their collections. *Cataloguing and filing rules for maps in the [American Geographical] Society's collections*,[52] published in 1964, is a revision of a manual previously issued by the Society in 1947 and 1952. The collection, which includes "more than 300,000 maps and more than 4,000 atlases," is cataloged "by area-subject classification, chronologically arranged." Prof. Thomas R. Smith, Kansas University, is the author of *The map collection in a general library, a manual for classification and processing procedures*.[53] Although based on experience in the Kansas University Map Library, "it is expected that the classification schemes and processing procedures detailed here will be applicable to comparable situations in other libraries and collections." In a paper published several years earlier Smith indicated that the Kansas University objectives, procedures, and schedule were to *a)* encompass the variety of maps in the collection, *b)* be within the capabilities of inexperienced personnel, and *c)* arrange the maps in a logical and simple arrangement, and with an efficient utilization of storage space and equipment.[54]

In response to numerous requests from depository members, the Army Map Service distributed, in 1965, a description of a cata-

loging and filing system which would be applicable to the average depository map library.[55] The instructions suggest "that a preprinted card with a check-list format is the best suited for the system [described]." A sample check card is appended to the instructions. Also recommended is "that your basic file system be oriented to geographical area." A "Glossary of selected mapping terms" is a useful appendix to "A simplified map collection system."

Most United States libraries that classify their maps use the Library of Congress' *Classification, Class G.*[56] The third edition (1954) of *Class G* has unfortunately been out of print for several years. In 1963, Charles Buffum reported a number of additions and changes in the atlas and map portions of the G schedule.[57] A reprinting, including additions and supplementary changes to January 1966, was published in February 1967.[58] Copies may be ordered from the Superintendent of Documents. The G schedule for maps and atlases, in common with all classifications, has its limitations and deficiencies. With the benefit of hindsight, there would be obvious advantages if the same notation sequence were used for both maps and atlases. In an areal classification it is inconsistent, for example, to classify an atlas of Denmark under G2055, and a map of the same country under G6920. The inadequacy of the G schedule in providing for various cartographic formats has also been criticized. Some map librarians, too, would still argue the relative merits of geographical and alphabetical classifications.

An extensive study of geography and map classifications has been conducted over the past fifteen years by the International Geographical Union's Commission on the Classification of Geographical Books in Libraries. The Committee's findings and recommendations have been summarized in several official reports.[59] The final report (1964) includes Emil Meynen's paper "On the classification of geographical books and maps and the application of the Universal Decimal Classification (UDC) in the field of geography." Among those who have published informal summaries of the Commission's work are Gerlach,[60] Libault,[61] and Wallis.[62] Among the positive results of the Commission's work are the inclusion of an alternate schedule for geography in the sixteenth edition of the *Dewey Decimal Classification,* and approval, in principle, to develop an alternate geography schedule within the Library of Congress Classification. At the Rio de Janeiro International Geographical Congress (1956), Dr. Gerlach, the US member on the Commission, presented a paper on "An adaptation of the Library of Congress Classification for use in geography and map libraries."[63]

A useful list of geography and map classification schemes was compiled by Catherine J. Bahn, for SLA's Classification Committee.[64] Publication dates range from 1930 to 1960.

The Title II-C program and automation offer the best hopes for standardized and cooperative map cataloging. Individual maps, as previously noted, are not yet being acquired in the Title II-C program supported under provisions of the Higher Education Act of 1965.

Automation in Map Librarianship

The automation outlook is, happily, more promising. Map collections, principally those within the federal government, were among the pioneers in library automation. The Army Map Service has had a punch card catalog for maps for more than eighteen years, and AMS acquired a Univac I electronic computer over fifteen years ago. Other federal map and areal photographic collections also have a number of years experience in this field. Several map and chart libraries within the Department of Defense have automation studies in progress. In March 1967 it was reported that the Nautical Chart Library, Naval Oceanographic Office, was the first DoD map library to be operational with computerized catalog controls. The Library of Congress is presently involved in a program which is expected to achieve computerized controls of its central bibliographic record within the next decade. Although maps, as nonbook (there's that ugly word again) materials, are not included in the present study, personnel in the Library's Geography and Map Division are studying computer capabilities for cartographic collections.

A few individual map librarians have in-

SPECIAL LIBRARIES ASSOCIATION

News and Notes

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The Board of Directors announces with sincere regret the resignation of Bill M. Woods as Executive Director of the Special Libraries Association. His resignation was effective on the fourth of July.

Mr. Woods had served the Association in that capacity for eight years, and his place will be hard to fill.

To find a replacement for Mr. Woods, the President, Mrs. Elizabeth R. Usher, has appointed a Selection Committee. The members are:

DONALD WASSON, Librarian *(Chairman)*
Council on Foreign Relations, Inc.
58 East 68th Street, New York 10021

MRS. MARGARET H. FULLER, Librarian
American Iron and Steel Institute
150 E. 42nd Street, New York 10017

WILLIAM BUDINGTON, Librarian
The John Crerar Library
35 W. 33rd Street, Chicago, Ill. 60616

CHESTER M. LEWIS
The New York *Times*
229 W. 43rd Street, New York 10036

The Committee needs, and certainly will appreciate, suggestion from SLA members of persons qualified for the position of Executive Director. The Board hopes to decide on a successor before the end of the summer. Any Board or Selection Committee member will be glad to receive names of possible candidates, but applications should be sent to Mr. Wasson.

SLA members attending the New York Convention learned that the lease for our New York offices will not be renewed after its expiration on July 31, 1967. Our offices have been in the Stechert-Hafner Building at 31 East 10th Street, New York, since 1939. In March 1967, the landlord found that he needed our space for his own use, and that he would be unable to renew the lease; the Association can occupy the premises until December 31, if necessary. Thus a pleasant landlord–tenant relationship comes to an end after twenty-eight years.

Between March and the Convention week, the Executive Director had considered a number of other locations in Manhattan. These investigations showed that rent for any new location (although *not in a new* building) would increase our total occupancy costs to several times our present annual total. The move presents a temporarily difficult situation because the Association's annual income and expenses have been just about equal in recent years, and we do not have an adequate cushion to absorb an increased rent as well as the costs for several other planned programs.

Many proposals were discussed by the Board during its record number of sessions in New York. Several of these proposals were referred by the Board to the Advisory Council for advice and discussion. To the Association's members who were not in New York, we can say that our problems and their possible solutions were considered in great detail by the Board, by the Finance Committee, by the Headquarters Operations Committee, by the Advisory Council, and at the Annual Business Meeting.

Under the pressure of time, your Board was faced by a four-horned dilemma:

a) some Headquarters services should be curtailed, or
b) our Chapter and Division allotments should be curtailed, or
c) our General Reserve Fund and our accumulated savings would be depleted, or
d) our annual dues should be increased.

Possibly the most equitable final solution will be some combination of all four possibilities.

By definition of our Bylaws, a dues increase cannot be effective before January

1969 (after approval by the members in June 1968); but to depend on a dues increase *alone* would also not be realistic.

The Board of Directors adopted a number of courses of action after both the Advisory Council meeting and the Annual Business Meeting. The Board recognizes that some of its decisions may not be received with popular acclaim either from the membership, or from the Chapters and Divisions, or from Association staff. It is the Board's hope that the members will realize that some of the June decisions may be modified at subsequent Board meetings in September 1967 and January 1968—after there has been more time for a more careful evaluation of the several possible approaches.

The most important actions of the Board are:

1) A reduction of the total 1967-68 expense budget by 10 per cent below the level for expenditures for 1966-67 (even if there is an increase in income during 1967-68). Such a reduction will reduce our expenses to the level of the 1965-66 fiscal year. (Among other actions, the Board instructed the Chapter and Division Liaison Officers to recommend a suitable reduction in allotments—but to avoid any proposal that would *selectively* penalize Chapters and Divisions that have sponsored successful fund-raising projects.)

2) The Board recognized the views expressed by members concerning the possible relocation of Headquarters in another city; but for several reasons the Board decided to remain in the New York metropolitan area. About one-half of our members (3,200 out of 6,700) are represented in the Chapters located between Boston and Virginia—with a center-of-gravity near New York. Rental costs in major cities are about the same for equivalent properties. Although lower rentals may be available in smaller communities, there are then additional problems and expenses for a relocation in another city. The Board defined guidelines for the Headquarters Operations Committee.

3) Because of stipulations in our Bylaws regarding announcements of possible increased dues, the Board approved a dues increase effective January 1, 1969. It is important that the members recognize that this Board action could be revised before the final details are submitted for a membership vote at the Annual Business Meeting in June 1968. The Board's action was to approve a dues increase to $30 per year for Active, Associate, and Affiliate members effective in 1969; an increase in fees for affiliation with extra Chapters and Divisions to $6 per year; and an increase in Life membership to $500. It *is* the intention of the Board that a dues increase will be discussed by the Advisory Council in January 1968; and that additional information concerning the proposed dues increase, as well as other fiscal matters, will appear in *Special Libraries* during the coming months.

4) As a result of discussion by the Advisory Council concerning the use of the General Reserve Fund, the Board accepted the recommendation of the Finance Committee regarding *balanced* withdrawals from both the reserve fund and from the savings in the general fund between July 1, 1967, and December 31, 1968. The Council had asked the Board *not* to use more than $35,000 of the approximately $58,000 now in the General Reserve Fund without again asking for advice from the Council.

With the full cooperation and with the good will of all components of the Association, both its members and its staff, we *can* survive our "crisis," and the Association will go forward with renewed vitality.

FRANK E. MCKENNA, Past-President

Not all the official business at the New York Convention revolved around the Association's finances, though it must have seemed so at times to weary Board, Council, and Committee members.

A complete report on the 58th Convention will appear in the September 1967 issue of *Special Libraries*. It was generally agreed that it was one of the most successful the Association has enjoyed. Total registrations reached 2,354, including 1,895 members, 48 students, 222 nonmembers, and 189 exhibitors. Seventy-six organizations filled the ninety-four exhibit booths in the Hotel Commodore's ballrooms. And New York City put its best foot forward weatherwise, offering conventioneers the only week of real spring that the city enjoyed in 1967.

Forthcoming Conferences (as Conventions are henceforth to be called) came in for their share of the Board of Directors' attention. The Board approved in general an increased fee schedule proposed by the 1968 Conference Committee. The new schedule calls for a full registration fee for members of $15 (advance) and $20 (at Los Angeles) or $8 per day. Nonmembers will pay $25 for the full Conference or $10 a day. Students and foreign librarians will continue to be registered free.

For the 1969 Conference in Montreal,

Miriam Tees, librarian of the Royal Bank of Canada, was confirmed as Conference Chairman succeeding Eleanor E. Magee, formerly of the Library School at McGill University, who resigned as Chairman on going to New Brunswick as librarian of Mount Allison University, Sackville. Miss Tees has been serving as Program Chairman for the Conference, and Eileen Morash, reference librarian at the National Film Board of Canada, was named to take her place.

The Board also agreed to reduce from the present ten years to six years the period for advance selection of Conference locations and called on the Conference Advisory Committee for a checklist of Conference site requirements. The Board also reconfirmed the present policy of holding Midwinter Meetings in cities with adequate transportation which do not now qualify as Conference cities.

The awarding of five $2,000 scholarships to library school students for the year 1968-69 was voted by the Board, which also revised the requirement for attendance at an "accredited" school to attendance at a "recognized" one.

The Metals/Materials Division has since announced that its Scholarship and Loan Fund benefit at the New York Convention, the boat trip around Manhattan, netted a total of $2,284 for the fund, or one complete scholarship.

The Board also voted that $2 from each sale of SLA jewelry would go to the Scholarship and Loan Fund. Formerly $1 of this had gone to the Motion Picture Fund, which has been dissolved. The Board has asked units of the Association that had contributed to the Motion Picture Fund for approval to transfer the monies to the Scholarship and Loan Fund.

The petition for a new Chapter, called Princeton-Trenton, was given Board approval. Present members of the New Jersey and Philadelphia Chapters will be polled to determine the new Chapter membership. This brings to thirty-six the number of SLA Chapters in the United States and Canada.

Provisional standards for binding used in libraries, covering openability, workmanship, and durability, issued by ALA's Library Technology Program in *Development of Performance Standards for Binding Used in Libraries, Phase II* were given Board approval.

The Chemistry Division requested and received approval for a spring 1968 meeting to be held at Chemical Abstracts Service in Ohio jointly sponsored by SLA's Chemistry Division and the Chemical Literature Division of the American Chemical Society.

Distribution of SLA recruitment material was discussed and it was agreed that Chapters sponsoring the annual John Cotton Dana lectures would be offered up to one hundred copies free of the various recruitment pieces available from Headquarters for promotional use at the lectures.

To expedite Board operations between meetings an Executive Committee of the Board of Directors consisting of the President, the President-Elect, and the Treasurer was designated by the Board.

Price Waterhouse & Co. were again named the Association's auditors for the 1966-67 fiscal year. The Board authorized from them a preliminary systems study of the membership records and accounting procedures at Headquarters.

The Fall Meeting of the Board of Directors will be held in New York City, September 25-26; the Board and the Advisory Council will hold their Midwinter Meetings in New Orleans at the Monteleone Hotel, January 18-20, 1968.

Late News Bulletin: The Association has signed a lease for pleasant, newly reconditioned space in New York City for the relocation of the SLA Headquarters operations. Complete information including the new address will be published in the September 1967 issue of *Special Libraries*.

A number of generous contributions toward the Association's unanticipated moving expenses have been received from Chapters, Divisions, and individual members. The Executive Committee of the Board of Directors has decided to use such contributions for the purchase of new furniture and equipment in keeping with the new office space, an item for which there are no budgeted funds presently available. In a later issue of *News and Notes* a complete list of contributors will be published.

SLA Sustaining Members

The following organizations are supporting the activities of the Special Libraries Association by becoming Sustaining Members for 1967. This list includes all applications processed through June 28, 1967.

ABBOTT LABORATORIES LIBRARY
AEROSPACE CORPORATION
AMERICAN CAN COMPANY
AMERICAN CYANAMID COMPANY
AMERICAN ELECTRIC POWER SERVICE CORPORATION
AMERICAN GAS ASSOCIATION
AMERICAN IRON AND STEEL INSTITUTE
AMERICAN LIBRARY ASSOCIATION
AMERICAN TOBACCO COMPANY
ARGONNE NATIONAL LABORATORY
ATLAS CHEMICAL INDUSTRIES, INCORPORATED
AVON PRODUCTS, INCORPORATED
BANK OF AMERICA
BASIC ECONOMIC APPRAISALS, INCORPORATED
BECKMAN INSTRUMENTS, INCORPORATED
BECTON, DICKINSON AND COMPANY
BELL AND HOWELL RESEARCH CENTER
BELL TELEPHONE LABORATORIES
BETHLEHAM STEEL CORPORATION
BOEING COMPANY
BOSTROM CORPORATION
R. R. BOWKER COMPANY
BRIDGEPORT PUBLIC LIBRARY
BRO-DART INDUSTRIES, INCORPORATED
CARRIER CORPORATION
CHICAGO MEDICAL SCHOOL LIBRARY
CIBA PHARMACEUTICAL COMPANY
COLLEGE OF PETROLEUM & MINERALS, Saudi Arabia
COLORADO STATE UNIVERSITY LIBRARIES
CONSOLIDATION COAL COMPANY
CONSOLIDATED EDISON COMPANY OF NEW YORK
CONTINENTAL CARBON COMPANY
CONTINENTAL NATIONAL AMERICAN GROUP
CORNELL UNIVERSITY LIBRARY
CORNING GLASS WORKS
DALHOUSIE UNIVERSITY
DALLAS PUBLIC LIBRARY
DEFENSE DOCUMENTATION CENTER
DEPARTMENT OF EDUCATION, Honolulu, Hawaii
DIAMOND ALKALI COMPANY
DOW CHEMICAL COMPANY, Golden, Colorado
DOW CHEMICAL LIBRARY, Midland, Michigan
E. I. DU PONT DE NEMOURS AND COMPANY, Lavoisier Library
E. I. DU PONT DE NEMOURS AND COMPANY, Technical Library
EAST ORANGE FREE PUBLIC LIBRARY
EASTMAN KODAK COMPANY
ESSO RESEARCH AND ENGINEERING COMPANY
F. W. FAXON COMPANY, INCORPORATED
FEDERAL RESERVE BANK OF NEW YORK
FIRST NATIONAL BANK OF BOSTON
FIRST NATIONAL BANK OF CHICAGO
FORD FOUNDATION
FORD MOTOR COMPANY
FREE LIBRARY OF PHILADELPHIA
GALE RESEARCH COMPANY
GENERAL DRAFTING COMPANY, INCORPORATED
GENERAL ELECTRIC COMPANY
GENERAL FOODS CORPORATION
GENERAL MILLS, INCORPORATED
GENERAL MOTORS CORPORATION, Public Relations Library
GENERAL MOTORS CORPORATION, Research Laboratories
GENERAL RADIO COMPANY
GLICK BOOKBINDING CORPORATION
B. F. GOODRICH RESEARCH CENTER
HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
IDAHO STATE UNIVERSITY LIBRARY
INDIANA STATE LIBRARY
INTERNATIONAL BUSINESS MACHINES CORPORATION
JOHNS-MANVILLE RESEARCH AND ENGINEERING CENTER
JOHNSON REPRINT CORPORATION
WALTER J. JOHNSON, INCORPORATED
KAISER ALUMINUM AND CHEMICAL CORPORATION
ELI LILLY AND COMPANY
LINDA HALL LIBRARY, Kansas City, Missouri
LOCKHEED MISSILES AND SPACE COMPANY
LOS ANGELES COUNTY MUSEUM OF ART
LOS ANGELES PUBLIC LIBRARY
A. C. MCCLURG AND COMPANY
MCGRAW-HILL, INCORPORATED
MCKINSEY & COMPANY, INCORPORATED
MANSELL INFORMATION/PUBLISHING LIMITED
MARATHON OIL COMPANY
MARQUETTE UNIVERSITY MEMORIAL LIBRARY
MAXWELL SCIENTIFIC INTERNATIONAL, INCORPORATED
MELLON NATIONAL BANK AND TRUST COMPANY
MINNESOTA MINING AND MANUFACTURING COMPANY
MISSOURI STATE LIBRARY
NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
NATIONAL BANK OF DETROIT
NATIONAL LEAD COMPANY
NATIONAL LIBRARY, Singapore
NATIONAL LIBRARY OF MEDICINE
NATIONAL PUBLICATION COMPANY
NEW YORK LIFE INSURANCE COMPANY
NEW YORK TIMES
NEW YORK UNIVERSITY LIBRARIES
NORTH AMERICAN AVIATION, INCORPORATED
OGILVY AND MATHER INCORPORATED
OHIO STATE LIBRARY
OKLAHOMA STATE LIBRARY
PENNSYLVANIA STATE LIBRARY
PENNSYLVANIA STATE UNIVERSITY
PEOPLES GAS, LIGHT & COKE COMPANY
PERGAMON PRESS, INCORPORATED
PITTSBURGH PLATE GLASS COMPANY, Barberton, Ohio
PITTSBURGH PLATE GLASS COMPANY, New Martinsville, West Virginia
PORT OF NEW YORK AUTHORITY
C. W. POST COLLEGE
PREDICASTS, INCORPORATED
PRENTICE-HALL, INCORPORATED
PROCTER AND GAMBLE COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PURDUE UNIVERSITY LIBRARIES
QUEBEC IRON AND TITANIUM CORPORATION
RADIO CORPORATION OF AMERICA, Marion, Indiana
RCA LABORATORIES, RADIO CORPORATION OF AMERICA, Princeton, New Jersey
RADIATION, INCORPORATED
RAND CORPORATION
RICHARD ABEL AND COMPANY, INCORPORATED
ROCKEFELLER OFFICE LIBRARY
ROCKFORD PUBLIC LIBRARY
ROHM & HAAS COMPANY
ROYAL BANK OF CANADA
ST. JOHN'S UNIVERSITY LIBRARY
SAN JOSE PUBLIC LIBRARY
SHAWINIGAN CHEMICALS LIMITED
SHELL DEVELOPMENT COMPANY
SHELL OIL COMPANY
SKOKIE PUBLIC LIBRARY
SINCLAIR OIL CORPORATION
SQUIBB INSTITUTE FOR MEDICAL RESEARCH LIBRARY
J. W. STACEY, INCORPORATED
STANDARD OIL COMPANY (NEW JERSEY)
STANDARD OIL COMPANY OF CALIFORNIA LIBRARY
STATE UNIVERSITY COLLEGE, Genesco, New York
STATE UNIVERSITY OF NEW YORK, Oyster Bay, New York
STECHERT-HAFNER, INCORPORATED
STERLING-WINTHROP RESEARCH INSTITUTE
SUFFOLK COOPERATIVE LIBRARY SYSTEM
SUN OIL COMPANY
SYNTEX CORPORATION
TAYLOR CARLISLE'S BOOK STORE, INCORPORATED
TECHNICAL BOOK COMPANY
TEMPRESS RESEARCH COMPANY
TEXAS GAS TRANSMISSION CORPORATION LIBRARY
TEXAS SOUTHERN UNIVERSITY
J. WALTER THOMPSON COMPANY
TIME, INC.
TORONTO PUBLIC LIBRARY
TRW SYSTEMS
UNION ELECTRIC COMPANY
UNITED COMMUNITY FUNDS & COUNCILS OF AMERICA, INCORPORATED
UNITED STATES AIR FORCE ACADEMY
UNITED STATES DEPARTMENT OF THE INTERIOR
UNITED STATES STEEL CORPORATION
UNIVERSAL OIL PRODUCTS COMPANY
UNIVERSITY OF ARIZONA LIBRARY
UNIVERSITY BINDERY
UNIVERSITY OF CALIFORNIA, Los Angeles, California
UNIVERSITY OF CONNECTICUT
UNIVERSITY OF DENVER
UNIVERSITY OF HAWAII LIBRARY
UNIVERSITY OF HOUSTON LIBRARIES
UNIVERSITY OF MARYLAND
UNIVERSITY OF MINNESOTA LIBRARY
UNIVERSITY OF MISSOURI AT KANSAS CITY
UNIVERSITY OF NEW MEXICO
UNIVERSITY OF OKLAHOMA LIBRARY
UNIVERSITY OF TEXAS
UNIVERSITY OF WASHINGTON LIBRARY
UPJOHN COMPANY
WILLIAM JOHN UPJOHN ASSOCIATES
WCC ASSOCIATES
WAYNE STATE UNIVERSITY
WESTPORT PUBLIC LIBRARY
JOHN WILEY AND SONS, INCORPORATED
H. W. WILSON COMPANY
WORCESTER FREE PUBLIC LIBRARY
WYETH LABORATORIES, INCORPORATED
XEROX CORPORATION
ZEITLIN AND VER BRUGGE

terested themselves in library automation over the past several years. Not until 1966, however, did SLA's Geography and Map Division establish a Committee on Automation in Map Libraries. A preliminary statement of objectives, and the names of committee members were published in the September 1966 *Bulletin*.[65] The Committee's first report, including "Selected general references on library automation," appeared in *Bulletin,* no. 66, December 1966. Scheduled for publication in the March 1967 issue was a list of "References on automation of cartographic collections." Included in the latter are several that describe proposed systems for automated map libraries. Two or three other papers, outlining plans for automated controls of map libraries, are in process and scheduled for early publication.

The Army Map Service distributed, in September 1966, a leaflet entitled "Automation of a map library." The introduction states that "the opinions are dynamic and are offered as food for thought. They are not advanced as official policy [of the AMS] or attitude, hence must not be considered as such." Automation is defined, in the leaflet, as "the use of electronic equipment, alone or in concert with film devices, for mechanical processing of mass data." Before adopting automation it is recommended that a feasibility study be made "to insure that your manual system is the best possible within the limits of your resources." Further thoughts on "Automation of a map library" are scheduled for discussion in subsequent issues of the *AMS Depository Newsletter.*

Several proposals for automated map library systems that have been described in professional journals were developed for collections varying in size from 50 to 300 thousand maps. It is questionable whether automation is economically practical for collections of this size, particularly for those in the lower range. Funding organizations are reluctant to give financial support for systems based on such small collections. It is inevitable, therefore, that the Library of Congress, with its large and diverse cartographic collection, and the recognized competence and experience of its specialists in the Geography and Map Division, must assume the initiative and leadership in standardizing and automating map cataloging.

The almost limitless capabilities of the computer in processing and controlling information will require reorientation of our viewpoints and abandonment of some pet ideas and beliefs. The "area main heading" concept is almost certain to be one of the first casualties. Information systems specialists point out that "the maintenance to the artificial distinction between a main entry and added entries may not be necessary with electronic equipment nor may there be any need to restrict the number of author entries used with any single work, because the capacity and flexibility of the system will permit the use of all authors' names for their work."[66] Don Swanson similarly states that "the whole idea of a 'main entry' or of deciding what a work is 'mainly about' expresses a sort of 'pigeonhole philosophy,' in which it is attempted to enshrine each item of the collection in a unique niche. This philosophy, I think, deserves abandonment."[67]

Wesley Simonton gives specific consideration to maps (among other materials) in seeking to answer the question, "The computerized book catalog: possible, feasible, desirable?" "For maps," he says, "it is frequently asserted that area or subject is a more important entry than the author entry. . . . To an extent, but not completely, the 'added entries' solves the problems raised in these and other situations."[68]

Storage Equipment

There are few new developments to report with reference to storage equipment for maps and atlases. United States map libraries, with very few exceptions, store maps in horizontal drawer metal cases. Although there is as yet no agreement, by map libraries or equipment manufacturers, on sizes, the trend is toward drawers two inches deep, with inside dimensions approximating 43 by 32 inches. This size will accommodate maps up to 40 by 30 inches in size. Larger maps are folded, or cut into sections to this maximum size. Maps no larger than 40 by 30 inches are conveniently examined at library tables.

In 1961 the Special Libraries Association's Committee on Standards prepared a comprehensive report on various types of library

equipment. The section relating to map libraries, prepared by Catherine I. Bahn, was published in the *Geography and Map Division Bulletin.*[69] It "was based on a preliminary study of the literature on both map and other library standards, current research and development on documentation and on plans for libraries such as the Army Map Service, the National Archives, the American Geographical Society, Dartmouth College's Baker Library, the Library of Congress," and other map libraries. The report includes a list of manufacturers of steel map filing equipment.

In a paper prepared for *Library Trends,* J. Douglas Hill reports that "most map librarians now agree that [horizontal drawers] offer the best combination of protection, accessibility and ease of expansion. There is also unanimous agreement that cases should be of steel for durability; that drawers should be no more than two inches deep . . . ; that they should have a 'lock-out' feature to hold them in the open position while contents are being handled; and that they should be equipped with fabric 'dust covers' that hook at the front of the drawer, not only for protection from dust but to prevent maps from catching or rubbing on the underside of the drawer above or being pushed out at the back, and to minimize sliding by exerting some downward pressure."[70] Mr. Hill's paper also considers equipment for storing atlases, globes, plastic relief models, and maps rolled on rods. Special Libraries Association published in 1963 a monograph entitled *Special libraries: how to plan and equip them,* a project of its New York Chapter. The section on "Map filing equipment" was prepared by Paul B. Lee.[71] "My own experience," he writes, "is entirely with horizontal files, and for a library that has maps of widely assorted sizes and shapes, I believe this type of file is more generally useful."

Because they are the common format for classroom teaching, maps mounted on cloth and attached to rods present a filing and storage problem in virtually every elementary and secondary school, as well as in colleges and universities. Many practical and ingenious methods and equipment have accordingly been devised to cope with the rolled map storage problem. Collier,[72] Doerr,[73] and Roepke,[74] are among those who have advanced solutions within the past decade.

The future relocation of the Library of Congress Geography and Map Division to the projected new James Madison Memorial Building offers an unexcelled opportunity and challenge for planning and installing the most efficient and effective layout and equipment for storing, processing, and servicing all library cartographic formats. When the James Madison Memorial Building is completed, some five or six years hence, the collections of the Geography and Map Division will total an estimated 3.5 million maps, thirty-two thousand atlases, as well as various other cartographic formats such as relief models, globes, and rolled maps. Included will be one of the world's largest and most valuable collections of rare historical maps and atlases. Map librarians throughout the world will await with interest the Library of Congress' resolution of this problem.

Map Preservation

Mounting on cloth, with a flour–water adhesive, was the standard method of map preservation for some four centuries. Maps that were hung on walls as decorations, or for teaching purposes, were generally also coated with varnish. While the latter treatment may have protected maps from dirt, dust, and moisture, it also contributed to their deterioration, as varnish darkens and becomes brittle as it ages. The life expectancy of many maps has, therefore, been curtailed by the varnish treatment.

In recent decades laminating maps between sheets of plastic film (with or without cloth reinforcement) has been increasingly employed to protect them against physical and chemical deterioration. The National Archives developed techniques for laminating maps some thirty years ago, utilizing a flatbed hydraulic press. A Barrows Laminator (with roller press) was installed in the Library of Congress in 1951. Some twenty-two thousand map sheets have been laminated each year since that date. The Army Map Service has also had a Barrows Laminator for over fifteen years.[75] Similar units, capable of handling large-size map sheets, have been installed in several other

American institutions as well as in the British Museum. Other types of laminating presses, adaptable for map mounting, are also on the market.

Experience over the past two or three decades has established laminating as a major procedure for preserving maps.[76] While results are generally satisfactory, a critical review of the procedures might be made with the possibility of achieving even better results. If a film with greater tear resistance were used in the Barrows Laminator, it might be possible to omit the cloth reinforcement on many maps. Further studies and experiments on the Barrows' recommendations for deacidifying paper might be made with reference to developing equipment (bath or spray) for reducing time and labor in deacidifying large map sheets. It is possible that deacidifying, without lamination, might be adequate treatment for sheets of some large- and medium-scale map sets, which are printed on physically strong (but chemically vulnerable) paper.

The 1956 revised edition of Clara E. LeGear's *Maps, their care, repair and preservation in libraries,* is still the only publication in this field that deals specifically with maps.[77] It is, unfortunately, no longer in print, although microfilm reproductions may be ordered from the Library of Congress Photoduplication Service. Because of Mrs. LeGear's retirement, and the many new technical developments during the past decade, no revision of the publication is planned.

Largely because of the studies and researches of the W. J. Barrow Research Laboratory, supported principally by the Council on Library Resources, a large body of new data and information relating to the deterioration and preservation of paper is now available. Few of the studies are concerned specifically with maps but, because most cartographic publications are printed on paper, the findings and recommendations are applicable. Only a few references relating to the work of the Barrow Laboratory are cited here.[78] Others can be found through the catalogs of most research libraries.

The greatest preservation problem, for map librarians, as well as others in the library profession, is posed by maps and books published within the last century, and especially from about 1870 to 1920. The heavily glazed pulp papers, used for color lithographic printing in the last decades of the nineteenth century, are particularly subject to chemical deterioration. Some publications of this period (including maps) have become so brittle and fragile that they are beyond preservation. Thousands of volumes, in this state of deterioration, have been discarded by libraries, after the contents were transferred to microfilm.

Many of the illustrated atlases of United States counties, published between 1865 and 1890, were printed on such impermanent paper, often in editions of not over three thousand copies. The preservation of historical cartographic records of this type should be a major concern of map librarians. Because of the importance of color on maps, and distortions in scale and size that are common in photoreproductions, microfilms are not satisfactory substitutes for printed maps and atlases. To insure the permanent preservation of the county atlases (and other atlases) published in the last quarter of the nineteenth century, it may be necessary to disassemble each volume, deacidify the individual pages, laminate each sheet with a tough plastic film, and assemble and rebind them between new covers. This will admittedly be a costly procedure, but it may be a necessary one if we hope to preserve a reasonable number of copies of these historical documents.

The physical and economic problems which these older publications present emphasize the importance of printing today's publications on permanent/durable paper. This is in fact one of W. J. Barrow's most persistent recommendations, and his reports on permanence/durability of the book provide excellent guidance. While librarians wholeheartedly support the use of permanent paper, particularly for publications earmarked for library collections, publishers are deterred because of possible increased production costs.

In the cartographic field, the best paper used by U.S. official mapping agencies today has a life expectancy between thirty-five and fifty years. At a Federal Map Users Conference, in 1964, Walter W. Ristow called attention to this problem. "Map papers [used] in recent years are supposedly very strong. They are designed to withstand the

rigors of field operations, military maneuvers, and Geological Survey work. . . . In some recent tests of modern map papers [William J. Barrow] has found that they have a high acidity content and will be subject to a high rate of deterioration over a period of years. So, on behalf of the libraries of the country, I would toss out to you the possibility that the Survey, particularly in its library depository program, print quadrangle sheets on a more resistant paper."[79] Because the interest of the majority of map users is in current maps, with no concern as to their state of preservation some forty or fifty years hence, there is little likelihood that this suggestion will be acted upon.

Several recent general articles on preservation are of map library interest. Regarding substitution of microfilms for originals, John Allen observes that "at its best, microfilm is no more lasting than good paper and is subject to comparable ills and damage. If it is to endure, similar conditions for storage must be provided in terms of temperature, humidity, and atmosphere."[80] Lee Grove, reviewing the "old old story" of paper deterioration, believes the problem began "when the spread of literacy enlarged the market for cheap reading matter, and faster presses operating at a lower unit cost were developed."[81] On the same subject Richard Smith estimated that 90 per cent of the books published from 1900 to 1949 will be unusable for general library purposes within thirty-five years if protective measures are not taken.[82] "The most practical solution," in the opinion of a committee of the Association of Research Libraries, "is a federally supported central agency that will assure the physical preservation, for as long as possible, of at least one example of every deteriorating record, and that will make copies of these records readily available to any library when required."[83] In the cartographic field, the Library of Congress Geography and Map Division, within budgetary limits, has served as such a "central agency" over a period of years.

The average map librarian, as well as many of his specialized and unspecialized professional colleagues, is completely snowed under by the mass of published data relating to library preservation problems. They read, with considerable relief and hope, therefore, the announcement (in the spring 1966 issue of *Library Resources and Technical Services*) that the Council on Library Resources had made a grant, in the fall of 1965, to the ALA Library Technology Program to plan a three-volume manual covering the preservation and restoration of books and other library materials. In the latter category are maps, which with prints, microforms, recordings, films, slides, clay tablets, and papyrus, will be the subject of the third volume of the projected manual. According to the announcement, "the planning of the outline and text will probably take a year, and various specialists will be invited to contribute chapters." Map librarians can probably not, therefore, expect to see copies of volume 3 in less than three or four years.

New Cartographic Literature

The literature relating to maps, map makers, and map making has been greatly augmented over the last ten or twelve years. The *Cartographic Research Guide* project, planned by SLA's Geography and Map Division to provide a systematic approach to general and specialized cartographic literature was, regrettfully, abandoned. Members of the *Guide* Committee found it impossible to carry the project to completion with only volunteer help. When attempts to secure foundation support to complete and edit the *Guide* were unsuccessful, the project was, reluctantly, terminated. One section of the projected *Guide* was published, in preliminary form, in the *Geography and Map Division Bulletin.*[84] A preliminary draft of Part IV, *The Cartographic Library and the Map Librarian,* was issued in a limited number of mimeographed copies in 1957.[85]

Happily, *Bibliotheca Cartographica,* an international serial cartobibliography launched in 1957, is effectively serving as an index to current cartographic literature. Sponsored jointly by the German Cartographical Society and the Bundesanstalt für Landeskunde und Raumforschung (Bad Godesberg, Germany), *Bibliotheca Cartographica* is published, semiannually, by the latter organization. Collaborators in some thirty-six countries (including LC's Geography and Map Division) supply entries for *BC.* In 1960 the editor, Karl-Heinz Meine, reported on the plan and organization of *Bibliotheca Cartograph-*

ica.[86] The table of contents, in each issue, is printed in German, French, English, and Russian. References are arranged in classified order, according to the alternate Dewey classification for geography. Monographs and articles in serials are indexed in *Bibliotheca.*

The Bibliography of Cartography, a comprehensive analytical card file on the literature of cartography, has been maintained in the Library of Congress Geography and Map Division for almost seven decades. Microfilm reels of the Bibliography, including supplements (some twenty-five reels to date), may be ordered from the Library's Photoduplication Service. Prices will be quoted on request.

Selected references on cartographical subjects are listed in various geographical and cartographical serials. Geographical serials, including those that are no longer active as well as currently published works, have been indexed by Harris and Fellmann.[87] There is, unfortunately, no comparable guide to serials in the fields of cartography and surveying. K. A. Saliscev, one of the U.S.S.R.'s distinguished cartographers, however, surveyed the world's leading cartographic serials in a recent issue of *Petermann's Mitteilungen.*[88]

The principal cartographic reference and referral centers are within the federal government. Inquiries relating to current map and chart publications are handled by the Geological Survey's Map Information Office. "The primary purpose of the Map Information Office," as explained by its director, J. O. Kilmartin, "is not actually to sell or distribute maps, aerial photographs, or geodetic control lists, but only to disseminate information on what is available, where it can be located, and how to order it."[89]

The Cartographic Records Branch, National Archives, has custody of the official records, including those concerned with surveying and mapping, of all federal mapping agencies. Original manuscript maps of many of the early surveys of the west are among the records in the custody of the Cartographic Records Branch. Guides to a number of record groups have been published by the Branch. (See reference no. 21.)

The Library of Congress' Geography and Map Division, with its comprehensive and extensive collections of maps and atlases, continues to serve as the principal United States reference center for historical and current cartographical information. Because there is catalog card control for less than 2 per cent of the single maps (i.e., excluding sheets of multi-sheet set maps and chart series), the Division's potential for service is severely restricted. Cartobibliographies and map lists, compiled by various staff members, provide indexes to specialized segments of the collection. Among the more notable recent compilations are volumes 5 and 6 of *A List of Geographical Atlases.*[90] Volume 7, currently in compilation by Mrs. LeGear, will describe atlases of the western hemisphere acquired since 1920. It will probably be published in late 1968 or 1969. Specialized cartobibliographies, compiled in the Geography and Map Division in recent years, list marketing maps,[91] maps of Antarctica,[92] Civil War maps,[93] treasure maps and charts,[94] and maps of explorer's routes.[95] Bibliographies listing references relating to specialized types of maps have also been compiled.[96] A list of currently available publications may be requested from the Geography and Map Division, Library of Congress.

The Use of Atlases

Atlases are standard tools in general reference collections as well as in map libraries. In addition to the *List of Geographical Atlases in the Library of Congress,* there are a number of other guides and indexes that facilitate the use of atlases, as well as reviews of special groups of atlases and individual works. Only a sampling of these publications can be noted here. Whyte's *Atlas Guide,* published in 1962, is described as "a subject index to the atlases used in most public libraries, secondary schools and colleges."[97] It indexes twenty English language atlases, most of them published in the United States, ranging in date from 1946 to 1960. Bowker published, in 1966, *General World Atlases in Print,* which offers a number of "checkpoints . . . to prospective purchasers as a measure of assistance in choosing an atlas to meet their individual requirements."[98] It was "compiled primarily to provide average American users with a practical guide in the choice of a general world atlas."

In a review article, published in 1962, Ena Yonge evaluated sixty-eight general world and subject atlases.[99] The same reviewer also summarized briefly some one hundred regional atlases.[100] Various aspects of modern and historical atlases were covered in a series of papers published in the May 1960 issue of the *Geographical Magazine.* In the lead article Balchin observes that "it is quite astonishing to see how many kinds and sizes of atlases can now be bought or consulted."[101] He places atlases in four classes, i.e., general world, special world, general regional, and special regional.

Indexes to a number of American map collections have been published during the past several years by the G. K. Hall Company of Boston. By photographic offset reproduction, Hall has produced book catalogs of unpublished, and generally inaccessible, geographical and cartographical card indexes. Among Hall indexes already published (or soon available) are the Research Catalog of the American Geographical Society, the AGS's Index to maps in books and periodicals, Catalog of the U.S. Geological Survey Library, Index to the printed maps in the Mariner's Museum, and Index to the printed maps of Bancroft Library, University of California, Berkeley. Because of their high cost, Hall reprint catalogs are beyond the budgets of all but the larger research libraries.

Reference service on early maps and the history of cartography has been greatly aided by new and revised monographic and serial publications. Of particular note is the English translation, with revisions, of Bagrow's *Geschichte der Kartographie,* originally published in 1951.[102] Revised additions have also been published of well-known works by Crone,[103] Skelton,[104] and Greenwood.[105] Several excellent summaries and lists of early maps have been published for regions of the United States. William P. Cumming's *Southeast in early maps* is a cartobibliographical study of the southern Atlantic region in the colonial period. Originally published in 1958, a revised edition was issued in 1962.[106] *Mapping the Transmississippi west,* is a comprehensive cartobibliographical survey of western United States between 1540 and 1884.[107]

Serials on Cartography

Imago Mundi, an annual international serial, continues to be the principal publication medium for scholarly papers on the history of cartography. It also includes book reviews, bibliographies listing recently published books and articles, and a chronicle section which reports, by country, developments in the field of cartographical history. Leo Bagrow, who founded *Imago Mundi* and edited the first thirteen issues, died in 1957. Since 1962 the journal has been edited by Dr. C. Koeman, and published by N. Israel, of Amsterdam. *Imago Mundi,* no. 19, was published in 1966.

A relatively new serial, *Map Collector's Series,* is focused on the ever-growing fraternity of private map collectors.[108] It is edited by R. V. Tooley, author of numerous works on the history of maps and map makers. Dealers in out-of-print maps, in various countries, lend support to the *Map Collector's Series.* Through 1966, twenty-five issues were published, an average of four or more each year. The history of globes is the subject field of *Der Globusfreund,* a semiannual serial.[109] It was founded, and edited until 1962, by the late Dr. Robert Haardt.

A particularly noteworthy contribution to early cartobibliography is the catalog of mappemondes dating from 1200 to 1500.[110] It was compiled by the Commission on Early Maps of the International Geographical Union, Marcel Destombes, Commission chairman, edited the compilation.

The study of the history of cartography has been greatly facilitated by the large number of facsimile maps and atlases that have been published in recent years. A list of cartographic reproductions still in print was compiled, in 1960, by the Library of Congress, and reissued in expanded format in 1966.[111] The accelerated activity in cartographic facsimile publishing has been the subject of several articles.[112]

Exhibiting Maps

Maps are colorful and eye-catching exhibit pieces, and cartographic displays are effective in promoting the use and enjoyment of maps. Planning and arranging good exhibits call for imagination, familiarity with the map collection, desirable display space

and equipment, and an abundance of time. It is the rare map library that meets all these conditions. Exhibits all too often, therefore, get low priority in cartographic reference service. The literature, however, does record a fair number of map exhibits in recent years.

International congresses and conferences invite displays of official and commercial cartographic works of different countries. At the Pacific Science Congress, Honolulu, Hawaii (August 21 to September 6, 1961), the National Archives displayed maps illustrating the "U.S. Scientific Exploration of the Pacific Basin, 1783-1899."[113] The United States exhibit of thematic maps, at the Stockholm (1961) International Geographical Congress, was described by Tuttle in the *Professional Geographer.*[114] The same journal carried Biggs' account of the cartographic exhibit at the Seventh General Assembly of the Pan American Institute of Geography and History (Buenos Aires, August 1-15, 1961).[115]

Exhibits of historical maps have been featured at various American libraries. John Carter Brown Library's exhibit on "Early maps and their uses" was opened on May 17, 1963, with an address by Alexander O. Vieter, Map Curator, Yale University Library. Princeton University displayed groups of early maps which were described by Mrs. Fantova in the *Princeton University Library Quarterly.*[116]

Before his departure from Peabody Institute (Baltimore), in 1966, Frank Jones arranged a series of cartographic displays, among them "Baltimore mapmakers," "Roads through history: road maps from Rome to today," and "Outer space in ancient maps." A leaflet entitled "Notes on an exhibit of maps of the Pacific Northwest from the collection of Edward W. Allen," published by the Washington State Historical Society in 1963, records a cartographic display sponsored by the Society. The Birmingham Public Library published a catalog, in 1965, of "An exhibit depicting cartographically the history of the evolution of the Old Southeast in that crucial thirty years, 1790-1820." The maps displayed were from the Rucker Agee Collection, which was presented to the Public Library, in 1964, by Mr. Rucker Agee, a resident of Birmingham.

Employment in Map Librarianship

Employment prospects in map librarianship today are exceedingly favorable. In part because of retirements, but more especially because a number of colleges and universities have established separate map rooms or departments, the current demand for map librarians greatly exceeds the supply. This is reflected in salaries which are being offered. Current map librarian vacancies are posted at from $7,500 to $10,000, as compared with $6,500 to $7,500 several years ago. Institutions that can afford to pay at or near the top of the scale will certainly attract the best trained and most experienced of the new generation of map librarians. Those still limited to salaries below $7,500 must be satisfied with a lower level of competence.

There is little prospect that the supply of trained and experienced map librarians will meet present and anticipated future demands for some time. A few library schools give minimum encouragement to students who indicate an interest in map libraries by permitting them to carry out independent investigations or research in this field. No library school at present, however, offers a specific program for training map librarians. The University of Illinois Library School, which for a number of years had such a program, recently discontinued it. In March 1966, Drexel Institute Graduate School of Library Science sponsored a Map Library Workshop, at the Free Library of Philadelphia. It was directed by Bill Woods, former map librarian and recently resigned Executive Director of SLA. Mr. Woods was assisted by Ena Yonge, Map Curator Emeritus of the American Geographical Society, and Dorothy W. Bartlett, head of the Reference and Bibilography Section of LC's Geography and Map Division. The Drexel Workshop was reported briefly in the June 1966 issue of SLA's *Geography and Map Division Bulletin* (page 16), and in the September 1966 *Cahiers de Geographie de Quebec* (pages 336-337).

The literature on map library education has profited, in recent months, by two authoritative studies. Bill Woods' paper, entitled "Map librarianship," was published in the Summer 1966 issue of *Journal of Education for Librarianship.* Walter W. Ristow's

"Education for map librarianship," which summarizes results of a survey of accredited library schools, is scheduled for publication in a forthcoming number of *Library Journal.*

Developments Abroad

This summary has been concerned primarily with map libraries and map librarianship in the United States. The developments in this specialized branch of librarianship have been no less interesting and dramatic in Europe. Because of space limitations, it is not possible, however, to report the latter in this paper. We should perhaps note, however, that several major foreign map collections have also lost, by retirement, distinguished and experienced curators. Mlle. Myriem Fonçin, long-time head of the Map and Chart Department of France's Bibliothèque National, retired in 1964, G. R. Crone, librarian and head of the Map Room, Royal Geographical Society, London, retired at the end of 1966, and R. A. Skelton retired as superintendent of the Map Room, British Museum, on March 31, 1967.

The growing significance of map libraries in Great Britain is evident from reports of a meeting, in London, in May 1966, "to consider the proposal to form a Map Curator's group." Also, in September 1965 the newly organized British Cartographic Society held a symposium, at Swansea, Wales, on map libraries. Three papers presented at the symposium were published in the September 1966 *Cartographic Journal.*[117]

We cannot conclude this cursory look at European map librarianship without calling attention to Cornelis Koeman's authoritative directory of Dutch map collections.[118] Mr. Koeman observes that "the scientific study of the history of cartography has in the past been seriously hampered by our limited knowledge of the source material and its whereabouts. The present work is designed to remedy in part this situation."

In summation we reemphasize that the future is bright for map libraries and map librarians. Progress may be slow in the next year or two, because of a temporary shortage of experienced leaders. Internal and external pressures that are certain to build up, because of increased numbers of separate map rooms and departments, growth in cartographic holdings in new and long-established collections, the imperative need for standardization of map cataloging and classification procedures, inclusion of maps in the Title II program, and the inevitable mechanization of map cataloging, will definitely accelerate the emergence of maps in libraries within the next decade.

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Although library mechanization studies have been going on for many years, it was not until the Library of Congress Airlie House Conference in May 1963 that such studies really became "respectable" especially for the larger academic and public libraries. In reality it was not until 1963 that technological developments had progressed to the point that there was equipment available which could do an effective job for the library. This equipment is briefly described and current developments, which will affect library operations in the future, are listed.

Current Developments in Library Mechanization

I. A. WARHEIT

IN THE LAST three years there has been a major upsurge in the mechanization of libraries, especially large libraries. Formerly such efforts were confined almost entirely to small special collections. Automation in the major academic and public libraries did not become really respectable until the appearance of the King Committee study of the Library of Congress and the Airlie House Conference called by the Library of Congress in May 1963. Since then, a number of major institutions have undertaken studies and started implementing major conversions of both individual library programs and total library systems.

Late in the nineteen-forties, a few libraries began using unit record equipment for their various business operations such as purchasing and payroll. In 1949, the AEC installed a punched card system for control of security classified documents and for printing and collating the indexes to *Nuclear Science Abstracts*. A couple of pharmaceutical firms also began, in the early fifties, to use unit record equipment to search their files of research data.

As computers became available, a few industrial and research libraries began some information storage and retrieval work using these devices. Basically, these early systems closely resembled the processing done with the usual payroll and personnel records —that is, formatted files, read serially. These library records made up relatively small files and thus reading all the records serially, as required by the computer tape system, was economically feasible. As searching tools, however, they were not successful since they had to operate in a batch mode and could not respond to inquiries in any sort of real time. As a result, the computer began to be used more and more as a publishing device to turn out bibliographies, catalog cards, book or sheaf catalogs, and abstract journal indexes. The equipment manufacturers responded to this publishing requirement by making special print chains for their printers to provide upper and lower case printing and special characters as required, for example, by *Chemical Abstracts*.

As a continuation of this publishing activity, the Library of Congress is now, in its MARC Project, testing the feasibility of producing its catalog cards from computer tape, as well as making available copies of the tape to other libraries. In addition, a number of libraries are currently producing book catalogs. Some are even planning complete replacement of their card catalogs. The indexes to *STAR,* the NASA abstract-indexing journal, *Index Medicus, Review of Metal Literature,* and many others are completely computer produced. *Chemical Titles* and a number of other announcement bulletins are also completely computer produced using the KWIC or KWOC formats.

The book catalogs and the KWIC-type announcements bulletins are proving to be very useful. For the first time libraries are able to distribute records of their acquisitions and holdings to a widely scattered audience. Where in the past library patrons had to go to the library to consult the card catalog and the journal holdings records, they now are sent the catalogs and indexes, thus expediting interlibrary loans as well as aiding in or-

ganizing union catalogs. The latter permits them to coordinate their acquisitions programs and thus not have to duplicate little used titles. The availability of the book catalogs also, of course, greatly simplifies the acquisition and cataloging problems of libraries ordering titles listed in these catalogs.

These individual computer-publishing programs are being broadened to include groups of libraries rather than single institutions. Central, regional processing centers are being proposed and organized. Some are conceived simply as adjoining municipalities, others are county-wide units, and at least three are planned as state-wide organizations. In addition to providing processing services, some of the regional facilities are proposing to provide reference and loan services as well. There are also several commercial organizations now offering to do central library processing on the computer for local facilities that are too small and scattered to take advantage of new techniques.

The production of catalogs by computer presents no serious technological problems. Where the limited type fonts provided by impact printers are too restrictive, photocomposition techniques are available. The latter also make possible the niceties and economies of proportional spacing.

Filing Rules and the Computer

What is concerning the librarians are the filing rules that should be applied. Present-day library filing rules have become such a huge mass of special conditions, exceptions, and esoterica that it is a rare librarian who can thread the maze, while the public is usually completely baffled. The computer, with its rigid collation sequences, must have special programming and flagging of records to make filing sequence exceptions. Librarians are, therefore, seriously examining their overly complex filing rules in an attempt to simplify their present tasks, produce cheaper computer outputs, and make life easier for the untrained library user.

The really serious problem with book catalogs is the economic one. The production of the first book catalogs are proving to be cheaper than present card catalogs. However, since no one likes to handle separate supplements, librarians want to produce catalog cumulations, and these grow progressively more expensive. There seems to be a number of special situations where either cumulations are limited or supplements are acceptable, such as for undergraduate libraries or special collections, or where the added benefits of having multiple catalogs are so great that the added cost of cumulated book catalogs is justified; so one can expect an increasing number of libraries which will be producing book catalogs.

An interesting recent development to reduce cumulated printed catalog costs is the production of catalogs directly from computer tape onto microfilm using the computer coupled high-speed microfilm recorder. Now that this recorder will format images as required for microfiche production, very interesting possibilities are opened up for very high-speed, economical production of published catalogs.

The KWIC and KWOC listings are essentially inexpensive, simplified catalogs. Since their costs are so low, less than 25 cents a title as a rule, and since they require almost no professional skills to produce, they are making it possible to produce catalogs for the many holdings that libraries formerly could not afford to catalog, thus opening up many bibliographic resources that have been buried in numerous collections.

Publishing from the computer is essentially, however, just another way of producing manual bibliographic tools, but, by being able to produce these tools in quantity, notably in the case of the book catalogs, the library's effectiveness is greatly extended.

Although the computer was proving to be useful for publishing and for handling the business transactions of the library, the librarian still had serious reservations about its fundamental utility. He facetiously said it was still in the age of the scroll and had not matured to the age of the book. He objected basically to the fact that it was a linear-serial device.

In 1956, however, with the appearance of the RAMAC, the first of the random access or, as it is called today, direct access devices appeared. Now for the first time one could go directly to a record without having to read serially all the records that preceded it. Although the first application planned for the RAMAC was for inventory control,

it is interesting that some of its first tests involved the storage and interrogation of a library catalog. Essentially, of course, a library catalog is a highly complex inventory and stock control system.

The first direct access files were too small and too expensive to be used for libraries. Also the computer users, being a little less than enthusiastic about the complexities involved in programming direct access files, did not encourage the librarians to use them. The librarian, however, has certain fundamental problems that can be solved only by providing direct access to his information. To begin with, he has large files. A library's holdings and circulation records are counted in the hundreds of thousands and in some instances in the millions. It is, therefore, impractical to pass them all linearly to find a single item. The user wants to access these records in real time. He wants to find a specific book and determine its availability and applicability in a minimum waiting period. He does not want to be told that the library has, for example, time on the computer during the second shift and will he please come back tomorrow to find out if the library has the book he wants. He will, of course, become further exasperated if the book is charged out and he has to wait another twenty-four hours to find out when it might be returned. In most of his services to the user, the librarian needs real time access to his records. Therefore, from a technological point of view, the librarian could not afford to become fully involved with computer systems until there was some definite promise of real time, on-line computer capabilities.

Tools for the Librarian

Today, with the increasing availability of time sharing, multi-programming, and terminals, the librarian is beginning to see that the computer has now become a very powerful tool for performing many of the library's tasks. Thus, from a technological, hardware point of view, the librarian is now beginning to get the tools he needs. Briefly, they can be listed as follows:

1. An on-line, always available central processor (CPU). This can be either a fully dedicated system or can be time shared with other users.
2. A direct access file whose capacity is large enough and storage costs low enough that it can store all the necessary records, such as the catalog, the serials records, the circulation control records.
3. Terminals for both input and output or interrogation. These include both keyboard and display consoles.
4. Printing capabilities which can provide all the necessary type fonts and symbols. These include both impact printers connected directly to the computer and photo-composition devices which accept computer outputs.
5. Data collection devices for easily and quickly recording all transactions, especially the circulation of books and other loans.

Although each of these types of units is currently operational, no fully integrated, total library system using all these capabilities has as yet been assembled. Implementation, however, has been started at a number of university libraries and we can expect to see fully operational total systems at a number of research libraries in three to five years.

In 1963, the Library of Congress said it would require a trillion bit direct access file for its central catalog groups and it estimated that it would cost five million dollars. Such a file did not exist in 1963. Today such a file is being delivered to several AEC facilities for around one million dollars.

Input terminals have been used for a long time in a great variety of applications. One library has for the last three years been using two input terminals connected to a remote computer to prepare its inputs. This library is now having programs written for a display terminal to be used for making searches. Project MAC at the Massachusetts Institute of Technology has been using teletype terminals for over two years to search index files. In 1962, the King Committee estimated that the Library of Congress would require fifty-five input-output consoles or terminals for the library staff and 108 output-only consoles for readers. In view of the demonstrated editing capabilities of today's on-line terminals, the projected figure of fifty-five staff input-output consoles is much too low.

Display terminals are now being installed for a variety of tasks. Experimental library applications using such terminals are being demonstrated and developed.

Multi-processing and multi-programming were new and exciting a few years ago. Today, almost every major university is installing or actively considering installing a computer with multi-processor, multi-storage, and multi-channel switching capabilities for various time-sharing applications as required by remote users.

Time sharing is a natural for libraries. The real utility of time sharing may be questioned for the usual problem-solving operation which does not make use of a large stored data base and for those batch processing operations such as payrolls and accounts receivable that are normal and most efficient for many data processing applications. Libraries, however, must have unscheduled intermittent access to large data banks. Furthermore, although library input-output requirements may be high, their actual processing requirements are usually very low. Under such circumstances, time sharing of a central processor via terminals is most economical. The planned installation of time-sharing facilities at a number of universities will, it is anticipated, greatly enhance the opportunities for libraries to apply computer techniques to their operations.

EAM or unit record equipment was first used in libraries for the business operations, primarily the purchasing activities, and it is only recently that such applications have become something more than just accounting procedures. By providing automatic follow-up of orders, by systematic canvassing of vendors, and, as time goes on, by rapid automatic checking of holdings and outstanding orders, acquisition is being greatly speeded up. Also, those institutions which have a large number of different accounts, special funds, departmental allocations, and time-limited allocations are finding the computer a tremendous help in keeping control and making better use of their finances. In other words, libraries can now apply the efficient ordering and purchasing techniques which are being used by commercial and industrial organizations. Although not very glamorous or even interesting to bookmen, these commercial techniques have proved to be some of the most profitable applications in libraries.

Dr. Warheit is Program Administrator for Information Retrieval in the Data Processing Division of the International Business Machines Corporation in San Jose, California. *His paper was originally presented at the American Association for the Advancement of Science meeting in Washington, D. C., in December 1966.*

Data Collection and Circulation Control

Probably the most popular library application is the use of data collection devices for circulation control. Originally these terminals were designed to collect manufacturing production data. Normally the source data is read from a worker's ID badge and production information is read from a prepunched card and/or from a simple keyboard or data cartridge reader. Similarly, librarians use a borrower's badge and a prepunched book card to capture the circulation information in machine readable form which can subsequently be processed. The terminals are also being used by large library processing departments to maintain in-processing control.

The use of these data collection devices makes it possible to charge out books faster and thus reduce congestion at the circulation desks, which is becoming quite serious in many college and university libraries. The return of books to the shelves is also greatly speeded up since books do not have to be "slipped." Turn-around time of book availability is improved and this, in essence, increases the effectiveness—one could almost say profitability—of the collection. Also, with the elimination of clerical filing of circulation cards, location information of requested titles is available much faster.

Of course, the initial investment in machines and machine readable book cards has made many librarians hesitate to mechanize their circulation control. In addition, since libraries have never had any proper cost accounting, administrators have not really known what their present manual circulation systems actually cost them. As a result, these costs have been usually grossly underestimated. It is only now that some efforts are being made to do realistic cost accounting and thus arrive at true costs. This is making mechanized circulation control much more attractive economically.

All this presupposes, of course, a well-designed system. Some of the pioneer systems, especially those that relied almost entirely on EAM procedures and some of the early batch-mode computer list printing systems, left much to be desired. A real breakthrough came with the application of data collection terminals, but the real utility of these systems will only come when they become on-line systems.

The availability of data collecting and interrogation terminals now makes it possible to scatter library facilities in an area without excessive duplication of collection and records. Where formerly every effort was made to have one single, central library with a single, central control point, in order to avoid expensive duplication, today numerous departmental, divisional, and college libraries are being set up as satellites of central libraries. Terminals from each satellite are connected to the central files and so each control point has available to it all the library circulation and bibliographic information. Catalogs can be accessed from any point. Books can be requested or returned at any point. This is, of course, an idealistic picture which will come true only when the major library records are in machine readable form, but a number of institutions are building separate library facilities and are planning to coordinate operations using terminals.

Even though these terminals were not specifically designed as library circulation control terminals, they are proving so useful in breaking the old circulation bottlenecks that many libraries give this the first priority in their mechanization programs. It is hoped that this popularity will stimulate the manufacturers to market circulation control terminals specifically designed for libraries. These terminals will be much cheaper than the present data collection devices and will probably have the capability of reading data inscribed on the books, doing away with the troublesome book card.

We must not forget the rapidly increasing availability of reproduction devices. In many instances it is already cheaper to reproduce a copy and give it to the library patron, rather than to circulate the volume. A major difficulty with this, however, is the copyright problem. This will have to be solved soon.

Although all the major library hardware desiderata are not as yet available—for example, multi-font optical scanners and associative memories, but even these seem possible —nevertheless the actual availability of hardware is not the problem. The major problems are the development of total systems employing these new devices, the preparation of machine programs to run these systems, some standardization, and the economic justification of the required investment.

The present plans and efforts are essentially for the mechanization of existing manual systems. Proposed fundamental changes are minor. There is, as yet, not enough experience on which to base revisions. Justification for the new mechanized systems is primarily based on economic and growth or capacity reasons. More work is to be accomplished and additional services are to be provided more quickly and at lower unit cost. In view of past experience with data processing equipment, one cannot help but be very optimistic about the cost effectiveness of these new programs, even though the pioneers encounter very real development and learning costs.

A Few Trends and Problem Areas

The tendency todays seems to be to set up a sequential or serially organized main or bibliographic file and to provide a secondary index, usually in the form of an inverted file, to the main file. This inverted index or inverted file is an alphabetic list of descriptors with the addresses on the main file of each citation, reference, or tracing. This is analogous to a card catalog or a book index where each subject reference refers to a page in the book or to an actual document.

This rather basic or classical approach has so far proven to be the most efficient. Computer people, however, have continued their search for potentially better file organizations. One proposal, the multi-list file organization system, uses a chaining technique. Here, one is first directed through a dictionary to the latest record associated with a term. This record contains the address of the next record having the same descriptor. And so one can run through a chain or list until one reaches the oldest or last records or comes back full circle to the starting record. Although such a system seems economical of storage space, in that a secondary index does not have to be

stored, it does pose serious file maintenance problems and is less efficient as a searching method. With rapidly decreasing storage costs, economics and efficiency seem to favor the secondary index or inverted file approach.

Another major consideration is the indexing of documents. Classification schemes, both human and machine-generated, are being studied but are not being used except as aids in developing descriptors or other word tags. Occasionally, classifications are employed as small subsets under specific descriptors but, in general, they are not being used for major library retrieval systems. Indexing, especially coordinate indexing, is the preferred method.

Generally speaking, librarians are not really concerned with indexing. They are concerned with descriptive and subject cataloging, that is, the broad identification of book contents rather than the pinpointing of specific data. Indexing, especially of journal articles, reports, symposia papers, and other separates, are generally the responsibility of professional societies, government agencies, industrial organizations, trade groups, and a few, special, discipline-oriented libraries such as the National Library of Medicine, the National Agricultural Library, and the National Referral Center of the Library of Congress. Libraries, however, will have to use the index-abstract outputs prepared by these organizations and are, therefore, concerned how good these retrieval systems are.

Attempts to date to do machine indexing have only been partially successful. Both statistical methods and sentence analysis, which attempts to imitate human logic, are being tried. The present prognosis that these approaches will succeed is very poor. Machine indexing seems to be doomed to the same fate as machine translation. Human indexing, for the time being at least, remains a component of the total information system.

Although machine indexing is, as yet, inadequate, what may develop is machine-assisted indexing. Present computer dictionary programs are being routinely used to convert synonyms (or *see* references in library parlance), up-post terms (that is, add indexed references to broader terms), and show relationships. Also, automatic indexing techniques are available to extract frequently used nouns or nouns with unusual frequency of use for review by human indexers, and so on. Using these capabilities, it is hoped that indexing will be easier and more uniform.

There are successful retrieval systems that do no indexing at all. Using concordances, they effectively scan the total text. The success of these systems depends on having a fairly controlled language as inputs and a careful preparation of the search question. To date, their best success has been in the area of searching statutes and in special closed environments such as in an industrial organization that is concerned with a limited variety of products, applications, and disciplines. Full text retrieval has also been used successfully where precision and completeness of retrieval are not important, such as in Selective Dissemination of Information (SDI) or other current awareness programs. There is experimentation to extend full-text processing to broader fields such as patent searching, but it is too early to know if this will be successful.

The use of descriptors or single terms to index is favored because one can thus take advantage of the manipulative powers of the computer. The fixed filing required by classification schemes and subject headings in essence sets up a statically organized body of information. The searcher must adapt and reorient himself to the fixed file. But by using single descriptors and the sorting and manipulative capabilities of the computer, it is now becoming possible to organize the information to suit the requirements of the individual searcher.

Very little is known, however, about this interaction of the individual and the index and retrieved data. What, for example, are the human factors involved when a searcher works at a library terminal? No one is quite sure how the index information should be organized and presented to the searcher so that he can properly formulate his question. It is hoped that some of the work presently being done with the terminals used in computer-assisted instruction will be of assistance in developing effective terminal-oriented library systems.

There are many other developments which will greatly affect library operations. These include such things as: digitizing vs. analog recording of information; capturing machine-

readable text; multi-font optical scanners; use of associative computer memories; potentialities of parallel access or extremely high speed streaming processors; development of high-capacity buffers to hold information; quick and very cheap reproduction methods.

These are for the most part still in the laboratory stage, and have not been applied as yet to specific library problems. It is obvious, however, that they will offer the librarian many capabilities he has not had in the past, and he will have to adjust his operations to take advantage of these new tools. It is quite evident that librarianship is facing a major revolution in the immediate future, and it will take a lot of imagination and a lot of work, not only to develop the new operations, but just to stay abreast of developments.

Library Literature Gleanings

PAUL WASSERMAN WRITES on "The Library and Information Professions in a Time of Change" in *PNLA Quarterly* for January 1967. He states: "We are now in the midst of the fiercest period of competition for the information function that we have ever known."

"Librarianship and Documentation: relationships in the United States" is Foster E. Mohrhardt's subject in the v. 16, 1966, no. 3 issue of *Libri.* In the introduction to his paper, which was presented at the 32nd Session of the IFLA General Council (The Hague, September 1966) he states: "I think it is fair to report that documentalists and librarians in the United States view each others' work both with respect and also with an appreciation for the commonalty of their responsibilities and objectives. In fact it is much easier to identify and describe points of similarity in these two fields than it is to find true points of difference either in theory or in practice."

Also in this issue of *Libri* is an article by I. P. Kondakov, director of the Lenin State Library, Moscow, entitled "The Library and Documentation."

Aslib Proceedings for February 1967 has an article on the "Mechanization of Serial Records with Particular Reference to Subscription Control" by M. A. Scoones, Shell International Petroleum Company. The January issue of this journal has an article by B. R. Aston entitled "Management: the intellectual challenge," a paper presented at the 40th Aslib Annual Conference, September 1966. It includes diagrams and references. "There is talk now of a new professionalism in management, a contentious notion depending on how professionalism is defined."

"A graphic graphics card catalog and computer index" is the subject of Boris W. Kuvshinoff's article in *American Documentation* for January 1967. "The development of a low-cost library control system for visual aids based on punch cards is described."

The Winter 1967 issue of *School Libraries* has an article by Sylvia Marantz—"Maps in the Library." "Though it isn't always easy, the difficulties in storing, cataloging, and circulating bulky non-book items can be overcome." This is a matter of adapting standard principles rather than creating new ones.

"FAIR (Fast Access Information Retrieval) Project; aims and methods" appears in *Aslib Proceedings* for March 1967. "The research project is a test of novel ideas in that it involves the use of known techniques to explore several difficult problems in the field of Information Retrieval. A by-product of the research will be a library and information service in the field of Biomedical Engineering. In about eighteen months it should be possible to report the results of our studies."

Brenda White's article in the *Library Association Record,* December 1966, covers the "SfB System; classification for the building industry."

"Data Transfer: explosion and remedies" appears in the April 10 issue of *Publishers Weekly.* This is a report from the American Book Publishers Council given at a conference at Arden House, March 13-17.

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Inhouse ADP Training

TRAINING TOWARDS the introduction of mechanization was decided on as a necessity as well as a prerequisite for the staff of the Department of the Interior Library when it became evident that more advanced techniques utilizing electronic data processing applications were to be initiated, based on the results of previous systems analysis work. Although a two- to three-day Civil Service course in library application of automation was available at scheduled intervals as well as occasional courses at universities or technical schools which may in varying degrees have been oriented toward library mechanization, management decided to provide inhouse training for several major reasons. One big factor was that the program could be designed directly around the mechanics involved in the library's own situation of converting from a manual to a mechanized system. The situations and examples in each case were made more meaningful since the staff was well acquainted with internal procedures as was indeed the case. Another major reason was the opportunity for each member of the staff to avail himself of the training course without greatly impairing the operational aspects of the library. This objective was reached when it was decided to split the staff and provide two sessions. Other factors such as cost savings, demonstration equipment availability, and material availability all favored this type of program.

The course, entitled Introduction to Automated Data Processing as Applied to Libraries, began February 15 and ended June 2, 1965. It was a two-part course of forty-eight hours with a one-hour-a-week lecture period plus a two-hour lab and exercise portion. The theory and lecture portion was essentially divided into four main phases. Phase I concerned itself with the information flow, phase II with operational details, phase III with information storage and retrieval, and phase IV with recent techniques emphasizing selective dissemination of information.

The lab and exercise portion of the course was provided with the assistance of Dr. John R. Dere, consultant. Starting with the basic introduction of the punched card this portion included flow-charting, an introduction to data processing systems, form design and printouts, introduction to control panels, simple wiring exercises, and by-product printouts. At each appropriate stage the staff was introduced to the specific equipment discussed together with one or more operating exercises in which they themselves were involved. Later, examples of automated or mechanized products and their tools were reviewed. This included thesauri, KWIC indexes, book catalogs, periodical printouts, SDI examples, and finally a familiarization with the DDC, Medlars and NASA systems, experiments, and programs.

Supplemental teaching tools were frequently utilized in the form of actual machine manuals such as IBM A24-1034-1, 082-083 Sorters; A24-1005-2, IBM 85 & 87 Collators, as well as other publications related to this field such as IBM C20-8152, Flowcharting Techniques; IBM E20-8092, Selective Dissemination of Information, The MEDLARS Story from the National Library of Medicine, AD252000 the Evaluation of the ASTIA Automated Search and Retrieval System, and many other similar documents. A number of audio-visual aids were also used in the form of films, such as The Information Machine, Information Retrieval, The 360 Model 20, From Hot to Cold Type, and The MEDLARS Story, and selected examples from the series The Computer and the Mind of Man. A variety of books such as *Information Handling, Specialized Information Centers, Libraries and Automation, Book Catalogs* and *The Future of the Research Library* were also used. A written homework assignment was pre-prepared for each lecture and was based on the planned reading for the coming week. Each set of papers was reviewed, graded, and returned with comments or suggestions. A series of four quarterly class exercises including a final test were also given. This served to establish both a feeling of confidence for most participants and provided a true measure of what was being absorbed or comprehended. Each written exercise was so constructed as to vary the question pattern slightly and an analysis of the test results

was subsequently made.

Out of thirty-three persons originally enrolled it soon became apparent that certain staff members were unable to digest even the rudimentary principles of this technology while one or two who had the ability as based on their previous education found themselves unable to continue because of psychological blocks to machine techniques. An opportunity was provided everyone enrolled to continue or discontinue the course at the end of the first quarter. Seven persons dropped the course, two were excused, and two had transferred. Checking with the work on the persons who discontinued an almost parallel natural line was found between the two; it was logical and to be expected. This left twenty-two persons to continue. Out of these all twenty-two finished. By and large the staff did very well. There were nine A's, five B's, five C's, and two D's. Only one person didn't make it. The emphasis here is not on grades per se but is indicative of the measure of understanding achieved.

Today, or approximately two years later the library is well along in its mechanization program. Book selection, acquisition, budgeting and accounting, circulation, serials and journal records are all either fully operational or are in an area which has been started. Training the staff was just a beginning. In some cases conversion was easier to achieve because of a pre-oriented and alerted staff, while in others the concept of mechanization is still to be fully accepted or adopted. Over-all, however, the inhouse training effort paid a handsome dividend.

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Medical Librarian Trainee Program In a Medical Society Library

COCCIDIOIDOMYCOSIS! Island of Calleja! Vas deferens! Dimethyl sulfoxide! Deoxyribonucleic acid! Lysergic acid diethylamide!

Isn't that a conglomeration of polysyllabic technical terminology? To understand the medical sciences one must learn an entirely strange and complex language. As the new frontiers of knowledge fold back, for instance the nuclear and electronic applications to the healing arts, the environmental complexes of aerospace physiology, and the rapid advance in genetics, these dynamic fields almost daily add new and strange words to the biomedical glossary.

One would expect that this very strategically critical ancillary profession to the practice of medicine, namely medical librarianship, would require as a prerequisite a highly developed knowledge of medicine and its terminology. Until fairly recently such has not been the case. Recruits to medical librarianship have, per force, been drafted from the general fields. Hopefully a graduate professional librarian, as often with an academic background in the humanities as in the discipline of science, would be attracted to the staff of a medical library. Because the medical library positions up to now have not been attractive in terms of either salary or status, it was a rare occurrence when a biology or chemistry major accidentally stumbled through the doors. Once in a while a graduate registered nurse was attracted to the world of books. An M.D. librarian, which represents the ideal, is almost unheard of—in the past twenty-five years in the United States there have been probably not more than a half-dozen Sons of Aesculapius who have made medical librarianship their career.

But conditions are rapidly taking on a new look. Back in the late thirties Thomas P. Fleming, the medical librarian at the Columbia University College of Physicians and Surgeons, was invited by the Library School of the University to develop a summer-session course in medical bibliography. Within the next decade or so, several other library

schools followed suit. Growing out of this academic attention to the "specialty" of medical librarianship, the need for properly taught and trained personnel began to be felt. The result was a gradual improvement in the status, with subsequent increase in subject-specialty academic requirements. The concept of the intern and an internship has a unique, almost exclusive affinity to medicine. It was natural sequence therefore that a post-graduate medical librarian internship program was developed.

Such a program came into being several years ago at the National Library of Medicine when several young library school graduates were invited to accept one year appointments after graduation as interns in this world-renowned medical library. Thanks to U. S. Public Health Service grants the program was introduced at the A. W. Calhoun Medical Library, Emory University (Atlanta, Georgia), and the Biomedical Library of the Medical Center of the University of California, at Los Angeles.

Then came some of the "variations on the theme." One such was composed about three years ago at the Library of the Los Angeles County Medical Association. When a resignation of a professional member of the staff occurred, with no qualified applicant on the horizon, a decision was made to train our own. The full-time position was converted into two half-time librarian-trainee positions, and a job description was prepared to attract two library school students from the three local library schools. The only qualification was that the applicant be registered for at least six graduate units in librarianship, and be a candidate for a master's degree. The objective was to give the student, under the supervision of a competent staff of medical librarians, as realistic a professional experience as possible in a medical library, serving the largest county medical society membership of practicing clinicians (patient-related doctors) in the United States. Incidentally it is the only such professional trainee program sponsored by a private non-profit medical society of which the writer is aware.

While the emphasis is on medical reference and a maximum exposure to the biomedical literature, concerted effort is made to provide a rotation experience to all aspects of librarianship. The results to date have been most salutary. One of the first two trainees almost terminated the program. After the first three months one of the novices had reached such a degree of competence that the temptation was strong to "wash out" the mission, reconvert the position to full-time and sign her aboard. Fortunately for the future of the undertaking a budget request for an additional full-time staff member was denied, and after a searching examination of conscience, the temptation was resisted.

Now five trainees later (one by mutual enthusiastic consent continued into a second year and shortly will be appointed to fill a vacancy which conveniently occurred) the program in the following terms has been a roaring success: it is obviously a drop in the bucket in an effort to recruit and train students as medical librarians; a few students have available an opportunity to see how a medical library operates; the value of academic and practical interchange between staff and students can only be measured in qualitative terms.

"Drop in the bucket"—maybe this article may find its way through the electronic maze of MEDLARS to someone else who may try it. Maybe the radioactivity of the idea may register loudly on the Geiger counter of a colleague. Here's hoping one small shaft—a beam of enthusiasm—will trigger a weather satellite and the result will be a multitude of buckets collecting a measurable precipitation.

JOHN M. CONNOR, Librarian
Los Angeles County Medical Association
Los Angeles, California

Have You Heard . . .

SLA Stickers for Sale

Stickers bearing the official SLA emblem and the word "Member" were introduced at the 58th Convention in New York. Designed and executed by the Boston Chapter, the 1" x 1¼" sticker is white with black lettering and pressure sensitive. Packets of one hundred individual stickers on strips of release paper sell for $1.00. Sales are handled through the Chapters. Prepaid orders may be directed to the C.V.C. Seal Committee Chairman, Dr. Eunice C. Walde, Librarian, R. T. Vanderbilt Company, Inc., 33 Winfield Street, East Norwalk, Conn. 06855.

Use of the emblem will benefit the Scholarship Fund and also, hopefully, further recruitment.

CLR Elects New President

Verner W. Clapp, who is retiring from the presidency of the Council on Library Resources, Inc.—a position he held since CLR's establishment in 1956—will be succeeded by Dr. Fred C. Cole, former president of Washington and Lee University. Dr. Cole, who has been a member of the Council's board since 1962, will take office in September, 1967. A native of Franklin, Texas, Dr. Cole received his A.B., M.A., and PH.D. degrees from Louisiana State University and also holds an honorary LL.D. degree from Union College. He has been Washington and Lee University's president since 1959, coming there from Tulane University, with which he became associated in 1946. Prior to joining the Tulane faculty, Dr. Cole was an editor, writer, and historian for the Air Force.

ALA Library Announces Charge for Film Loans

Beginning October 1, 1967, ALA Headquarters Library will charge $3.00 for each one-day booking of a film. Charges for longer use will be arranged with the borrowing library as required. The use of the ALA Library film collection has grown to such an extent that the cost has become a serious burden on the library's budget. This new practice concerns films only. Filmstrips and tapes will still be available without charge, except for round-trip insurance and postage, upon receipt of the standard ALA Interlibrary Loan Request.

Thirty-ninth Library School Accredited

The official accreditation of the Department of Library Service of the North Texas State University, Denton, has been announced by the ALA Committee on Accreditation. This is the highest number yet of accredited library schools recorded under the Revised Standards of 1951. David A. Webb is director of the Department of Library Service.

In Memoriam

HARRIET D. MACPHERSON, prominent librarian and educator, died on March 26, 1967. Dr. MacPherson joined SLA in 1950 and resigned from the Association at the time of her retirement in 1958.

CATHERINE T. ALBRECHT, librarian, Investment Division, National City Bank of Cleveland, died recently after a prolonged illness. Miss Albrecht was a member of SLA since 1950.

COMING EVENTS

THE CONFERENCE ON MEASUREMENT AND EVALUATION IN LIBRARY RESEARCH will be held September 10-13, 1967, in Champaign, Illinois. Sponsored by the Graduate School of Library Science, University of Illinois, the conference should be of particular interest to library school faculties, administrators of large public and academic libraries, consultants, and personnel of state library agencies. Registration fee, which includes dinner on Sunday, is $40.00. For detailed information write Timothy W. Sineath, Conference Supervisor, Division of University Extension, 116 Illini Hall, Champaign, Illinois 61820.

THE FORTY-FIRST ASLIB ANNUAL CONFERENCE will be held October 9-12, 1967, in Harrogate, Yorkshire, England. Full program information and application forms may be obtained from The Meetings Organizer, Aslib, 3 Belgrave Square, London, S.W. 1, England.

Off the Press . . .

BOOK REVIEW

AMERICAN DOCUMENTATION INSTITUTE. *Annual Review of Information Science and Technology.* Vol. I. Carlos Cuadra, ed. New York: Interscience, 1966. 389 p. $12.75. (L.C. 66-25096)

The *Annual Review,* released in connection with the Institute's 1966 annual meeting, marks a significant step in the direction of synthesis and maturity in a field thus far lacking in coherence. Supported by National Science Foundation and the System Development Corporation, it brings together information on twelve areas of information science and its applications, all of them to one extent or another of interest and value to those concerned with system aspects of libraries and information services.

Robert Taylor's contribution "Professional aspects of information science and technology" is a most succinct and comprehensive statement, especially on the educational problems in both library schools and technical institutes, as well as on the delineation of roles in the newly defined science.

An analysis by Herbert Menzel brings together much of the evidence being gathered in a systematic way concerning the needs for and uses of scientific information, of concern in broad aspects of planning library services. Of particular interest to cataloging specialists will be Phyllis Baxendale's study of the work in the area of "Content analysis, specification and control," while those in search of a quick look at the state of library automation will find it in a survey by Black and Farley.

Other contributions concern file organization and search techniques; automated language processing; evaluation of indexing systems; hardware developments; man–machine communication; information system applications; information centers and services; and national information issues and trends.

As Mr. Cuadra explains in his introduction, the greatest difficulty in the production of the *Review* was definition of scope: "The audience . . . is interested, first in the process by which individuals communicate . . . by means of records, and second, in new computer technologies, particularly in the ways these technologies support and enhance communication ('information transfer') and our understanding of communication processes. . . .

"We have been interested in libraries, documentation practices, computer printing techniques . . . but in a selective way . . . from the standpoint of communication."

The literature reviews had the benefit of a well-organized literature identification and acquisition program, which resulted in a comprehensive bibliography compiled by Francis Neeland, an accomplishment of considerable value of itself. The *Annual Review* is probably the best single volume for a current view of the state of the art in documentation and in information science more broadly. Since it is the first of the series, reviews in most areas include some background which will be of value to the newcomer.

The quality of editing and of book production is very high, in keeping with the seminal value of this work.

JOSEPH CHAMINADE DONOHUE
Member of the Technical Staff
Informatics, Inc.

New Investigational Drug Code Compilation

A comprehensive listing of common experimental codes used for investigational drugs by pharmaceutical firms and research institutes has been published in *Unlisted Drugs.* It shows for each code the corporate name, city, and state or country of manufacturer. According to editor Boris Anzlowar, this largest such compilation so far published anywhere lists 150 codes commonly used by drug research organizations from all over the world, including the U.S., Western Europe, USSR and Eastern Europe, and Japan. For detailed information write the publisher: Pharmaco-Medical Documentation, Chatham, N. J. 07928.

New Bibliography on Machine Tool Referral

Compiled by SLA member Jackson Cohen, *Machine Tool Referral Guide* is not a bibliography on the machine tool industry but rather a guide to national and international sources of scientific, technical, and business information of interest to research, production, and business personnel active in the machine tool industry, and to those who may need information about this industry. Mr. Cohen was aided in his work by a committee, all members of SLA, and by the National Machine Tool Builders' Association in Washington, D. C. The Guide is available for $1 from Jackson Cohen, Science and Industry Department,

Public Library of Cincinatti and Hamilton County, 800 Vine Street, Cincinnati, Ohio 45202. Checks should be made payable to the Library.

"The Special Librarian must be Everyman" . . .

is a quote from "Special Libraries: the Best Kept Secret?" an article by Bill M. Woods in *Word Business '67* a once-a-year special career magazine prepared by the staff of the Yale Daily News. In his article, Mr. Woods discusses the tremendous shortage of qualified library personnel, particularly in the field of special libraries. He points out that positions in the profession are open in all parts of the U.S. as well as in other countries, and gives pertinent information on requirements, average salaries, and so on. Copies of *Word Business '67* are available from Yale Daily Press, 241-A Yale Station, New Haven, Conn. 06520.

Fifth Edition of Argonne List of Serials Published

This May 1967 issue supersedes the February 1966 edition. All copies of earlier editions should be discarded. For detailed information contact Argonne National Laboratory, Library Services Department, 9700 South Cass Avenue, Argonne, Ill. 60439.

SLA AUTHORS

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ing of books, full cataloging of photographs, pamphlet files. Past assistants moved to top positions. Qualifications: M.L.S. (may be in process), knowledge of History of Art, preferably college major, scanning ability in languages. Experience not essential. Salary dependent on qualifications. Liberal vacation and fringe benefits. Four colleges of Connecticut Valley (Amherst, University of Massachusetts, Mount Holyoke, Smith) offer cultural life. Scenic countryside with summer and winter sports. 3 hours from New York, 2 from Boston by car. Limousine service to Hartford-Springfield airport. Send résumé to Phyllis A. Reinhardt, Librarian, Hillyer Art Library, Smith College, Northampton, Mass. 01060.

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UNIVERSITY OF CALIFORNIA, DAVIS—Positions available July 1, 1967:

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REFERENCE LIBRARIAN—General (Librarian II, $7100-$9000).

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UNIVERSITY OF SOUTHERN CALIFORNIA SYSTEMS ANALYST—To develop research program and to supervise the application of new techniques in the information sciences to an established University Library system. Ph.D. preferred. Also openings for two departmental librarians in the World Affairs and the Science Libraries. Experience and subject specialization required for both positions. Salary dependent on experience. MLS from an accredited school required for all positions. Write Administrative Assistant. University of Southern California Library. Los Angeles, California 90007.

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BIOMEDICAL LIBRARIAN

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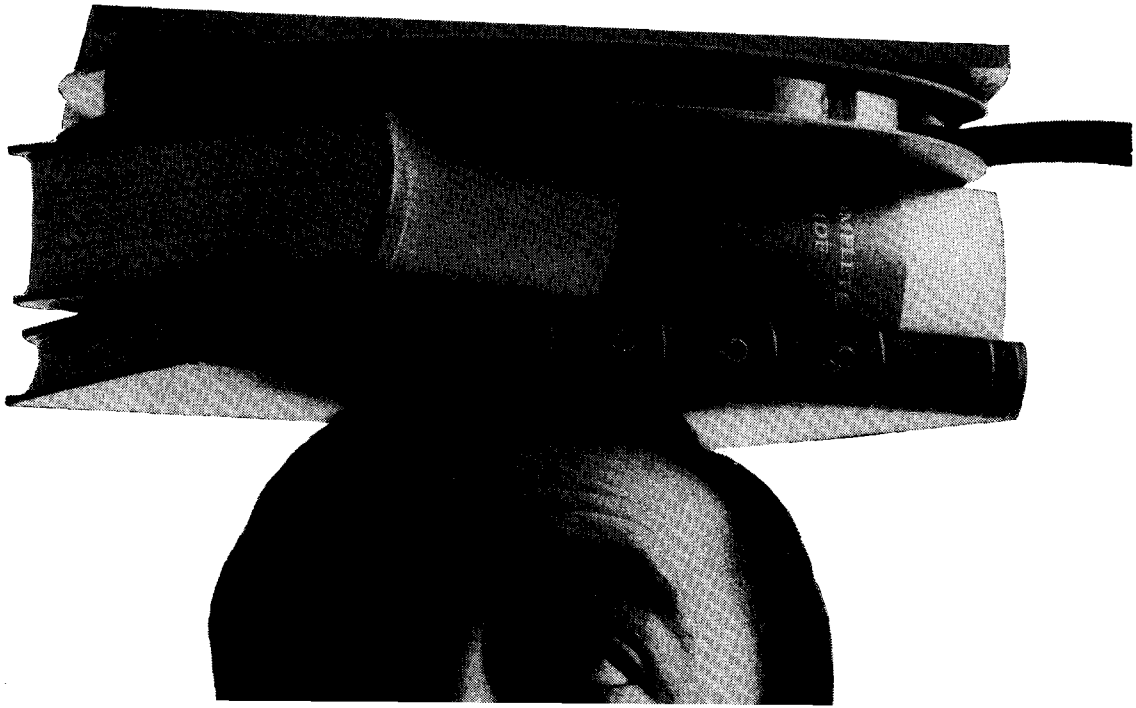

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